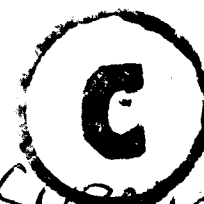


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RHEUMATIC HEART DISEASE

BY N. S. VARIAVA, M.D., M.S. (BOM.),

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Medicine, Grant Medical College, Bombay*

Rheumatic carditis is a very common condition. It forms about 25 per cent of all cardiovascular autopsies. If all cases of rheumatic fever were properly followed, we would find the heart involvement—involvement of either the myocardium, or the endocardium, or of the valves, in about 95 per cent of the cases. It is one of the very crippling conditions making the poor patient practically an invalid, and with each fresh attack the patient goes more and more downhill. For this reason it is desirable to know in detail certain facts about this dreaded condition.

Age:—It is very common in children. In children one of the early manifestations of rheumatic fever may be cardiac involvement. In them arthritis is less common as compared to the adults. It rarely occurs after the age of thirty years. The age period between 10 and 30 years is the most common.

Sex:—The disease affects both sexes equally. Up to the age of 20 years, girls are more liable to the disease. Generally there is a slight preponderance of females over the males.

Infection:—In the majority of the patients we find some source of infection, either in the tonsils, or in the nasal passages. Infection is one of the most important factor which determines the relapse.

Immunity:—It is unfortunate that a person who has once suffered from rheumatic fever, instead of developing an immunity, becomes more susceptible to the infection. This is more particularly true of the cardiac damage. With each attack there is more cardiac damage, than in the initial one.

SIGNS AND SYMPTOMS

The signs and symptoms are never going to be the same in all cases. It is generally observed that there are four well marked clinical groups.

(1) *Acute cases*.—The disease starts suddenly. There may be preceding sore throat, and tonsillitis. There is malaise, and pains and aches in the joints, two or three days before the acute onset. Fever then suddenly shoots up to 102 to 103 degrees F. Fever may be preceded by a chill.

Joints.—Soon one or more big joints may become very painful and swollen. The skin over the joints becomes red, and hot to touch. The joint also becomes very tender to touch. There is excruciating pain on the slightest movement of the joint. The disease is seldom limited to a single joint. In the majority of cases the inflammation wanders from joint to joint, *i.e.* the knee joint recovers, and the wrist swells. These changes may occur within a space of twenty-four hours. In the space of three or four days many joints may be affected. Most commonly the trouble starts with the knee joint. Then the ankle, the wrist, the shoulder, and finally the hip may be involved. This is the most common order of the joint involvement. In a few cases more than one joint is involved from the start. In severe cases many joints may be attacked simultaneously.

We have said before that the joints become swollen, but it is very rare to find large effusions into the joints. Besides suppuration never occurs. Further as the acute symptoms abate, the joints become normal.

Fever.—Fever may persist between 102 and 104 degrees. It is irregular in character. With the fever, other ordinary symptoms, *e.g.*, loss of appetite, thirst, scanty high coloured urine, and constipation may be present. Pulse is soft and above 100. Tongue is moist, and covered with a white fur. The patient may get profuse sweating of a peculiar sour odour.

Heart.—In the early stages the heart presents no abnormal features. But in such cases a careful watch must be kept over the heart, *e.g.*, the rate of the heart, the position of the apex-beat. Within a day or two, while the temperature is still high, a soft murmur may be heard in the region of the apex. More commonly the murmur is systolic in character. It is due to endocarditis. In other cases the heart may dilate during the acute stage of the fever. There is diffuse pulsation over the precordium. Cardiac dullness is increased, especially to the right, and the first sound may be soft and murmurish, or it may be completely replaced by a murmur.

Electrocardiogram may reveal changes which otherwise could not be made out by ordinary clinical examination. There may be disturbances of rate and rhythm, *e.g.*, tachycardia, extrasystoles, partial or complete heart block, or auricular fibrillation, or flutter. It may be difficult in many cases to diagnose the cardiac involvement even for days, by the clinical methods, and it is the

electrocardiographic record of the various waves that may help to know the true nature of the condition.

The most important thing to remember is that these various cardiac irregularities, and even the cardiac murmurs, are present during the acute attack only. When the acute symptoms abate, the various abnormalities might disappear completely. But if the patient gets repeated attacks of the disease, then permanent damage may be left.

Blood.—May show a marked picture of anæmia. There is usually a leucocytosis upto 15000.

The clinical picture above described is the one most frequently found in the adults. A person may get such one or more attacks, within a space of few years, and the final result will depend on the amount of damage done to the heart.

(2) *Subacute cases*.—There are not the acute features described above. All the symptoms are less marked. Arthritis is less intense, and fewer joints are affected. These mild or subacute cases may also show endocarditis or pericarditis. The symptoms may persist for weeks or months.

(3) *Infantile form*.—In children the first symptoms may be those of endocarditis or myocarditis. The symptoms are so vague that it can hardly be said to be a subacute attack. There is mild fever never going above 100 degrees F., or fever may not be a feature at all. We do not find swelling and pain in the joints. At the most there may be vague pains in the joints. There is loss of weight, anorexia, fatigue, and repeated attacks of epistaxis. Often none of these features are present. A child may come under observation with signs and symptoms of well marked endocarditis, or may present characteristic features of pericarditis. In female children especially there may be manifestations of chorea associated with cardiac symptoms.

(4) *Congestive cardiac form*.—Patient comes with signs and symptoms of congestive cardiac failure. On inquiry we get a history of repeated attacks of arthritis or carditis, or fever associated with joint pains,—a history usually spread over a number of years. When he comes to us, the only presenting feature is the cardiac or valvular disease. Fever and joint pains are now things of the past. These cases differ in no way from cases of congestive cardiac failure due to other causes. There is breathlessness, on slight exertion, or even at rest. In severe cases there is orthopnoea. There is often a history of precordial pain, or distress lasting for some hours, more marked after some exertion. There is palpitation. Oedema of the legs may be present. There is cyanosis of the lips and nails. There may be ascitis, and pain in the upper right quadrant of the abdomen, due to enlargement of the liver. There may be cough with expectoration, which might be blood stained. This is partly

due to congestion of the lungs, and partly due to secondary bronchitis.

DIAGNOSIS

Diagnosis may be very simple, or may be beset with difficulties. This is particularly true in children, and especially in early cases. In the early stages it may often be difficult to diagnose the particular heart trouble. Here the electrocardiogram may come to our aid.

The commonest condition found is Mitral Stenosis, with pre-systolic murmur at the apex. A well marked pre-systolic thrill is present. Aortic regurgitation can be diagnosed by an aortic diastolic murmur, conducted downwards along the left border of the sternum, upto the apex. There is water-hammer pulse. Pulse pressure is high. Pericarditis can be made out, by enlargement of the cardiac dullness, and friction sounds. Auricular fibrillation can be found out by an extreme irregularity of the pulse and heart beats, which can be confirmed by electro-cardiographic record.

PROGNOSIS

The immediate prognosis in acute cases is usually very good. The disease is rarely fatal in the early stages. But it is well to remember that sudden death may occur in the first attack. This is generally due to myocarditis. The mortality rate is hardly one to two per cent.

Late prognosis depends upon the damage to the heart, and whether there are signs of congestive cardiac failure or not. Repeated attacks of congestive cardiac failure are a bad prognostic sign. If bacterial endocarditis supervenes, the prognosis becomes grave.

TREATMENT

It will be seen from above that as the symptoms of the fourth group are quite different from the other three groups, the treatment cannot be necessarily the same. It is better to describe the treatment of the two groups quite separately.

I have designed for purpose of treatment the first three groups, under the head "Acute Cases", while the fourth group is designated "Congestive Cardiac Cases".

(1) *Acute Cases*.—As there is always a tendency to damage and cripple the heart, the main object of the treatment should be to get the patient through the attack, with as little injury to the heart as possible. To achieve this ideal, we must enforce complete bodily and mental rest. The patient must be put to the bed at once and the rest enforced for 2 to 3 months even in mild cases. In more severe cases rest upto six months must be insisted upon. This is more easily said than done. The period of rest should be determined from the following, (1) fever, (2) pulse, (3) leucocytic count and (4) sedimentation rate of the blood. If any of these are increased, it is an indication of further rest. During convalescence

exertion must be slowly increased, and with the return of even mild symptoms it must be discontinued, and further rest enforced.

The patient must be warmly clothed, and covered with blankets. Bowels must be attended to. Half to one pint of soap water enemata, or one to two ounces of glycerine enema, should be given, and repeated as necessary.

Diet.—Should be light, easily digestible, and such as would leave the minimum of residue. Milk, sago grain kanji, whey, soft custards, fruit juices, glucose, etc., should be given during the acute stage of fever. Later on the diet should be given freely so as to shorten the convalescence.

Fluids.—Give fluids freely. Water, barley water, glucose water, cocoanut water, alkaline drinks, like soda water, should be prescribed freely.

Drugs.—Salicylates are invaluable in acute cases. Give sodi, salicylas, grs. x to start with every 4 hourly. Gradually increase the dose, till a total of grs. 120 are given in 24 hours. With it prescribe sodi. bicarb, dose equal to that of the salicylate. The only disadvantage of this simple treatment is that in certain people the drug causes gastric upset. In such cases reduce the dose by mouth, and give about 60 grains of sodi, salicylate per rectum, or a smaller dose intravenously. With this treatment the fever comes down, pain is reduced, and the patient becomes comfortable. Then gradually reduce the dose, till finally grs. xxx per day should be kept up for a number of days. This maintenance dose should not be discontinued early, as there is a risk of relapse.

Other alkaline drugs like pot. citrate, pot. acetate, may be prescribed in appropriate doses, but their value is doubtful. Aspirin is a useful drug. Given in dose of grs. x every 6 hourly, it not only reduces pain, and temperature, but it also supplies the salicylates which is such a specific drug in this condition. For the pain Dover's powder grs. v to x four hourly, or even morphia injection gr. $\frac{1}{4}$ to $\frac{1}{2}$ may be given.

For the heart no drug need be prescribed. Prolonged rest is the only thing that is needed. During convalescence if the patient is anæmic some iron preparation, e.g., ferri et amm. citras grs. xx t.d.s, or some patent preparation like Biron D Cal. (Standard Chemical Works) in syrup or pill form may be prescribed.

Septic Focus.—After the patient recovers from, the septic focus should be hunted out, and properly treated. Careful dental hygiene is important. If there be any septic stumps they must be removed. Tonsils if they are guilty must be appropriately treated. Nasal passages must be properly investigated and treatment constituted if necessary.

(2) *Congestive Cardiac Cases*.—In these cases salicylates are useless, and should not be prescribed. My method in such cases is

to prescribe amm. chloride grs. x every four hourly. After about two hours after the first dose inject intravenously "Esidrone" (Ciba Co.) 2 c.c. mixed with 10 c.c. of 5% glucose. This produces profuse diuresis. Some patients cannot tolerate amm. chloride, for them cal. chloride in the same dosage may be prescribed with milk. The "Esidrone" may be repeated after 5 to 8 days if necessary. This treatment is so successful, and makes the patient comfortable so rapidly that it is no longer necessary to do venesection, or leech application or any other old orthodox treatment. Once all the signs of congestive failure have disappeared, the amm. chloride may be stopped, and replaced by a diuretic mixture.

Other treatment, e.g. rest, diet, etc., should be on the same lines as in the former case.

(Medical Bulletin.)

POLLUTIONS—A PSYCHIC AND SOMATIC STUDY

EDWIN W. HIRSCH, M. D.

Chicago.

Involuntary discharges of semen occurring during sleep, accompanied with erotic dreams and erection, may recur so frequently as to make the affected person physically and mentally ill. The usual treatment consists in medicating the seminal vesicles, the prostate gland, the genital canal and the ejaculatory ducts. These are the supposed underlying seats of pathology. This sort of interference has been notoriously inadequate. Only a paltry number of successes have been claimed for this system of combating a veritable nuisance. We ought to know more about nocturnal emissions and to have at our disposal ways and means of curtailing needless seminal losses. I propose to show that there is a pressing need for radically changing our attitude toward the problem of pathological emissions and to include a plan whereby the sorely distressed may find relief.

Urologists are divided into several schools of opinion as to the best way to handle the patient who states that he is being "knocked out" by his seminal losses. One group—and the bulk of urologists are in this category—believe that the cause is an inflammation of the sexual parts. Accordingly, they resort to local treatment. Another group adhere to this scheme, but also include sedation of the nervous system. The third school regard nightly emissions mainly as a psychic ailment, though recognizing that local and constitutional factors may occasionally be involved, either directly or

indirectly. Unquestionably, the best, the quickest and the most lasting improvement follows from adhering to the view that unusual sexual mechanisms are due to a disturbance of the mind as well as the body.

An error in medical logic is responsible for much of the confusion which exists in medical circles concerning the etiology of pollutions. Prior to the time when the practice of medicine was established on a firm foundation—and this date, by the way, was not so very long ago—physicians treated symptoms rather than the disease itself. If a man complained of a cough, the physician would prescribe a cough remedy. Whether the cough was the end effect of bronchial irritation, cardiac weakness, or caused by inhaling irritating fumes, was not seriously considered. If the patient got well, all credit went to the ingredients of the prescription. Usually, patients would tell their friends about the virtues of their prescription and would even advise them to take the same medicine. People would swallow any highly praised preparation without ever stopping to inquire whether it was indicated in their case or not.

As time went on and physicians began to view illness in a scientific way, they discovered that there are many causes for a cough, listened carefully to the patient's breath sounds, they examined the sputum, they took X-ray pictures of the chest, and made use of every known device to discover what elements were inducing the cough. Thus we see that physicians no longer were content to treat symptoms but searched for causes. To secure permanent improvement it was essential also to treat the disease and the patient.

This wave of progressiveness was very catching. The genito-urinary specialists ceased trying to stop night losses by numbing the patient's sexual sensibilities. They wanted to put the proposition of continued seminal losses on a scientific basis. They said that pathologic seminal emissions were an expression of diseased or inflamed seed sacs. They concluded, therefore, that no improvement could ensue unless the structures which were in a state of agitation could be quieted down. Their argument was that pollutions were a symptom and that it was no more sensible to treat a sexual symptom than it was to manage a cough without getting down to the root of the matter. Every disease had a cause, said the pathologists, and it was senseless to treat pollutions unless one got at the basic trouble—some irritation in the seminal reservoirs.

Attempts were now made to assist, in a scientific way, the man who stated that his very vitality was being drained via night losses. Sexual tenseness was lowered by the administration of nervous sedatives. Strong caustic solutions—and even the caustic substance in a pure state—were injected or applied to the verumontanum in the hope of fortifying the valvular action of the ejaculatory ducts. All this was done on the theory that the seminal ducts had to be

tightened. Thus the seminal seepage would be stopped. But it wasn't. Curiously enough, interference, or worse yet, meddling of this sort only served to heighten sexual ardor. The more vigorous the treatment, the more troublesome were the pollutions.

What mistake were physicians making? Why was this sort of approach a total failure? Had not the so called authorities, who had given special study to such matters, reasoned correctly when they stated that frequent ejaculations of semen during sleep were only a symptom and that no return to normal could be brought about unless the vesicles were made to behave? Yes, an erroneous deduction had been made! While it was true that pollutions were rightly regarded as a symptom: and while it was also a fact that the semen was ejaculated during sleep because the seminal vesicles contracted, it did not follow that the vesicles of necessity were diseased or inflamed. The propensity for the vesicles to empty was generated in a great number of instances by other factors. Few physicians then knew, what many more know today, that there is a higher power than the local sexual regulators which can start or stop seminal emissions; and that all mighty controller, is in the mind. It has taken researchers a long time to learn that mental excitation can and does, make the sexual apparatus work during the time when the body is almost at complete repose.

It is easy to see why our medical forbears accepted false dicta as the truth. They regarded abnormal seminal emissions as a symptom of seminal vesicle disease. It was all so perfectly obvious it could not be otherwise. So they thought. They said that seminal discharge was a consequence of a state of irritation in the seed sacs, just as the internal medicine experts had demonstrated that a cough was initiated by some irritant in the lung. As we now know, the two disorders are not comparable. In respiratory disease, we usually have the simple irritant and its direct effect on the lung. In the case of pollutions, we have to contend with a third factor—the brain. Physicians in the old days did not pause to consider that a sexual thought buried in the mind could be responsible for pollutions.

Only by understanding what goes on in the thinking apparatus, and only by knowing how to extirpate disturbing and provocative thoughts which incite unconscious sexual arousal and ejaculation, can the annoyance of involuntary emissions be overcome.

Since the turn of this century physicians who treat sexual disorders began to realize in all seriousness that the therapeutics of nocturnal pollutions was in a muddled state. Many prudish general practitioners considered it somewhat undignified to prescribe for any form of sexual weakness. Even the sexual disease experts were reluctant to discuss the relationship of sexual psychology to sexual pathology.

During the past two decades there has been a marked change in the attitude of the laity as well as the profession toward the pollution problem. Intelligent folks realized that an improperly functioning sexual gland could be corrected just as well as a disordered stomach.

Before analyzing the situations which are related to unusual night losses, it is well to say a few words about normal nocturnal emissions. The frequency of seminal vesicle expression varies with the age and sexual status of each individual. Adolescents come to know sexual maturity in a frightening episode. The virile fluid—somewhat akin to the way geysers spout through Mother Earth—breaks past its barriers, and informs the lad that he is now a man. Young vigorous males who are easily thrilled to intensity by the mere companionship of a fair sex member are bothered by pollutions not infrequently. Engaged young men may experience a night loss once or twice a week during the hectic love making period. A considerable difference in the sexual activity of various men is noted. Of course exuberant males full of nascent energy will exhibit physiological depletion much more often than the young man whom nature endowed with a sparing amount of virile sparks. We find that in middle-aged bachelors there are considerable lapses between their periodic pollutions, for they are less inclined to envisage romantic episodes. Allowing for individual variation, it can be said that pollutions occurring once a week, or once a fortnight, are compatible with a stable nervous and sexual system. Of course, if autoerotism or coitus intervenes, it serves as a sexual vent, and accordingly the number of pollutions will decrease or they may not even occur at all.

The consensus of medical men has it that pollutions are a physiological process and serve as a body safeguard. They are normal and healthful, provided the individual is buoyant and refreshed after their occurrence. If the nocturnal emission serves to relieve sexual tension, it has fulfilled a useful purpose and is regarded as nature's way of disposing of excessive sexual secretion.

How, then, are we to explain the nightly seminal pollution occurring in married men enjoying normal sexual relationship? If the pollution is a mechanical evacuation, why do they recur with such unnecessary frequency?

Granted that the problem seems very baffling: it is none the less solvable. We can best accomplish our task by dividing the subject into its proper phases by classifying pollutions into four groups: (1) mechanical pollutions, (2) substitute pollutions, (3) psychic pollutions, and (4) pathological pollutions.

Mechanical or physiological pollutions are the effects of continence. They occur in young males, or in mature men, who cannot respond to the plea of nature. Substitute pollutions are the sort which take place if the sexual mate is not available, and the

body must exercise its prerogative by sweeping out the virile substance in a safe and sane manner. Psychic pollutions are the effects of pleasing mental stimuli. Pathological pollutions ensue when the sexual mechanism is set into riotous motion. They may be due to psychic processes, undue fatigue, worry, local disease, systemic disease, disorders of the nervous system or other factors.

Abnormal pollutions either in the married or single man usually are the effects of psychic stimuli which lie concealed in the unconscious strata of the mind and flare into activity when a chain of unusual circumstances arises. Anxiety concerning the future of mankind, or a state of terror which is traceable to the impressions left by reading about the atrocities of war, can serve to weaken the inhibitors which guard the well being of the mind. Why should one who is sad have his unconscious thoughts turn to sexual reverie? It might be due in part to the toxic action of fatigue products, or it may be that the mind wants a pleasant sort of antidote for the usual sordidness it copes with daily. Many years ago, Mosso, the Italian physiologist, pointed out that utter exhaustion could induce unusual degrees of sexual appetite. During mental confusion psychic intoxicants can operate in like fashion.

Imaginary coitus created in a dream which is sufficiently vivid to develop a vigorous erection and permit the subject to semi-consciously enjoy voluptuous sensations, climaxed by orgasmic sensation and orgasm, is a form of mental auto-erotism—a non-guilty, non-sinful type of self-gratification. A man cannot be held responsible or censured for the wet-dream, since it can be claimed that he was oblivious to the entire act until he awakened and discovered what had transpired.

To help the man who ardently pleads for relief from nightly seminal losses, the physician must learn what goes on in the troubled mind. This is accomplished by obtaining the history of the person's sexual life. A record of this kind cannot be got as one wheedles out an account of the usual diseases and ailments of infant and adult life, which the average human being discloses with some degree of pride. A survey of a personality is made by establishing an emotional rapport between the sick man and the one whose function it is to administer aid.

If one would understand the *modus operandi* of pollutions, he has to be cognizant of the weaker links in the subject's sexual development. This is a laborious, painstaking, time consuming task. One must comprehend the degree and extent to which psychic factors have influenced traits of character. In a word, we must learn how the patient's life has been colored by emotion and to what extent the emotional component has been repressed.

The first requirement in managing a case of pathological nocturnal emissions is to inform the patient in all sincerity and

honesty that he is not undergoing a process of sexual debility. To this assertion the subject will counter by asking what, then, is the cause of his languor, loss of appetite, lack of zest for living headache, pain in the back, inability to carry on his business, smarting and burning sensation in the eyes, pains in the penis and testicles, as well as a thousand and one other complaints. My reply is that many of these disturbing conditions are the effects of apprehensiveness concerning the needless loss of semen.

One of the first things we learn about men who are weighed down by wet-dreams is that they believe their health is undermined in the same way that excessive intercourse works its damage. This idea originated many centuries ago when professional alarmists because of their ignorance—tried to lay all nervous disorders to the repeated shocks which the brain and spinal cord suffered from loss of semen during the sexual orgasm. Thus were ordinary folk baffled by astute befuddlers who profited neatly thereby. The red herring of "excessive coitus" is still pulled out of the bag whenever it is necessary for the physician to have an alibi for medical incompetency. The time is rapidly drawing to a close when this shallow explanation is acceptable.

A short lecture on the physiology of the nervous system serves to inform the sufferer that semen losses do not damage the cells or ganglia of the nervous system. It is astonishing to learn how little most men know about their own body. They allow such vivid expressions as "muscle wastage," "brain decay," "progressive atrophy," "lack of secondary sexual characteristics," "wasting degeneration," and "fatty degeneration of the spinal cord" to occupy a foremost seat in their mind. Alas! And this is much more disturbing—they associate these phrases with the ill effects of over exercise in sexual activity.

A pertinent dissertation on sleep is next on the agenda of re-education. The man who terms himself the victim of uncontrolled emissions must be made to realize that the sleeping period is not a state of narcosis. When the watchmen of the body are given a rest, the mind can play in an abandoned manner. Therefore, if nighttime or the sleeping period is the only interval in which the individual can enjoy unrestricted psychic play, then it is the physician's function to train the patient to alter his work and recreational program so that he will not try to do all his pleasure thinking when asleep.

Diet is of importance in some cases. I have succeeded in putting a quick end to a pollution habit which had extended over a nine month period by altering the program of the midnight feast. This person indulged freely in eating sausage, cheese, bread, pickles, and other delicacies just before retiring. He hated to give up his bedtime snack, but when he took notice of the absence of nocturnal

emissions on the nights he abstained from eating, he readily acquiesced.

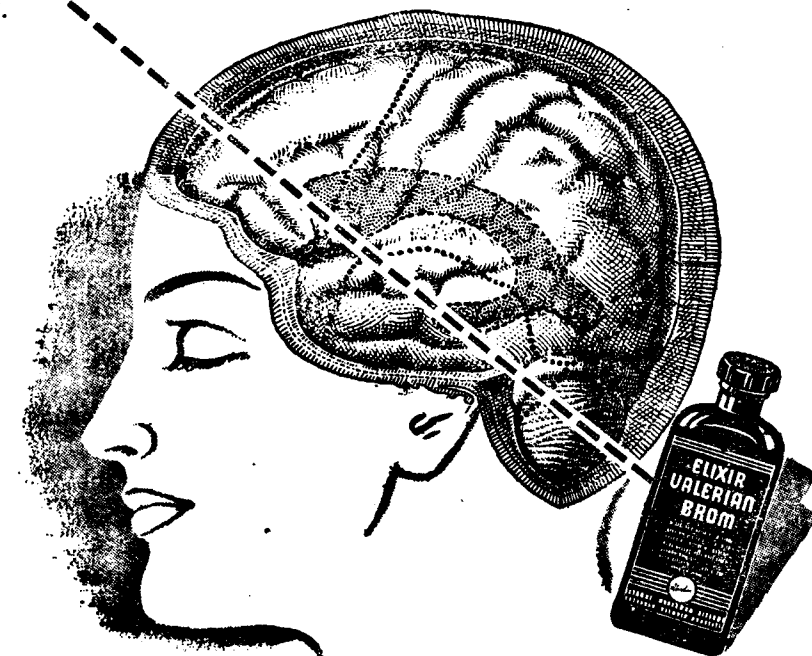
A revamping of the subject's pattern of life is indicated in most instances. There comes to my mind a case of a married man who dearly loved his wife and three children. On the surface he had not a worry in the world. But he was a man who was wrapped up in organization work. As chairman of numerous committees and delegate to conventions, his physical and mental reserve was sorely drained. True, he was proud of the honors which were heaped on him, but he was not aware that he was paying a terrific price for them. I recommended immediate resignation from several positions, and the effect was as startling to the patient's family as it was to himself. The moral was that the patient was cracking under a load and the pollution was the consequence of recourse to a type of mental relaxation which he was not getting in his sexual life. Though he was enjoying sexual relations with his wife, he was deprived of any true psychic relief because he indulged at the end of a busy day when he was mentally confused. During sleep, when more perfect peace of mind and body was to be had, the sexual mechanism could function in an unconstrained manner.

A splendid illustration of what can be accomplished without the patient being penalized by pain is seen in the case of a young man who reported continued pollution in spite of the treatment received from several urologists. How could he expect to obtain any improvement when all other urologists handled such cases alike? I informed him that no local treatment would be instituted. This seemed like a new deal and he accepted the plan. A detailed investigative study disclosed several pertinent clues. One very obvious restriction in his amative life was his apron string attachment to his mother. This was so firmly bound that any opportunity for marriage seemed like a hopeless proposition. By adopting a plan of action which provided more hours of escape, the young man freed himself of bondage and from nightly seminal losses as well.

No longer do physicians look upon functional sexual ailments as due to pure psychic or organic causes but as a combined proposition. This relationship is best termed the "psychic-somatic factor." Just as we have spastic action of the colon, so, too, there exists a nervous or spastic bladder, a spastic prostate gland and spastic action of the seminal vesicles. It is often very difficult to find all the factors which ignite the sexual system, but these can be detected by careful observation and by tracking down the mysterious and disturbing emotions. This is the best mode for effecting quick improvement in all instances of pollutions. Seminal losses can be stemmed by studying the individual's mental processes and directing the dynamic forces of the body along proper channels.

(Illinois Medical Journal.)

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THERAPEUTICS OF TESTICULAR DYSFUNCTION.

BY JAMES B. HAMILTON.

New Haven Conn.

The androgens of chief interest in therapeutics are testosterone, substance isolated from testis tissue of the bull, and a androsterone and dehydroisoandrosterone which are excreted in human urine. Clinically testosterone is the compound used at present almost exclusively. For intramuscular injections, the propionate of testosterone is utilised, as it provides prolonged action.

For a proper understanding of the uses, limitations and dangers of androgens, it is essential to appreciate.

- (1) The relationship between the testis and the pituitary.
- (2) The sequelae of castration and eunuchoidism.
- (3) The bodily functions and morphologic changes promoted by androgens.

Relationship between the Testis and the anterior lobe of the pituitary gland.

The testis has two rather distinct functions, spermatogenic and endocrinous. Both functions are induced by and dependent for maintenance on, gonadotropins from the anterior lobe of the pituitary. In turn, the testicular secretions limit the production by the pituitary of gonad stimulating material.

Castration Eunuchoidism. The extent of the abnormality resulting from insufficiency of testicular secretions depends on the degree of secretory deficiency and on the age of the patient at the onset of the condition.

Prepubertal onset of Testicular Insufficiency. Prepubertal deficiency of testicular secretion gives rise to the eunuchoid state in which the genitalia remain small and the skeleton is characterized by extraordinary length of the long limb bones, associated with delay of epiphysial union. The voice retains a high pitch, and the larynx does not have the prominence of the thyroid cartilage or the size of that of the adult male. The beard is usually composed of only fine hair, shaving being more a matter of desire than of necessity. The bodily proportions, a lack of muscular development and in some cases a characteristic distribution of adipose tissue along with the lack of beard and manly voice have given rise to incorrect allusions to femininity.

Post pubertal onset of testicular insufficiency. Eunuchoid proportions of the long bones are not observed if the epiphyses are already closed. The secondary sexual characters show regression but larynx and genitalia do not return to an immature state. An adult character of voice is retained and, which varies from subject to subject, a limited degree of sexual ability and desire.

Phenomena Characteristic of Castration and Eunuchoidism.

1. Absence of spermatozoa and testicular secretions. The most obvious derangements in the castrate man are the lack of spermatozoa and the low levels of androgens in the bodily fluids.
2. Integument. The skin is soft, and the face viewed from a distance appears to be that of a young person. The skin is characteristically of a pasty, sallow colour, due to lack of cutaneous pigments. The skin and hair dry and the sebaceous secretions apparently diminished. Acne does not occur in the person who does not mature sexually. The beard of the eunuchoid is soft whereas the post-pubertal castrate retains many hairs of large diameter. The axillary and public hair is of fine texture and of limited amount. Other hair on the trunk and that of the limbs is not of the coarse, thick type typical of secondary sexual hair. Eyebrows are less bushy.
3. Adiposity. In both eunuchoid and castrate men adipose tissue may be deposited subcutaneously, being particularly prominent about the mammae and over the trochanter and mons pubis.
4. Voice. In the eunuchoid the vocal pitch and range are high. The mature voice of the postpubertal castrate is largely maintained.
5. Hot flushes, similar to those in some women at the menopause occur frequently and if severe are followed by sweating. The chief complaint of many patients is fatigue and inability to carry on work.
6. Genitourinary system. In the eunuchoid man the external genitalia are indicative of the under developed state of the internal genitalia. The penis is not unlike that of a newborn child, the scrotum a flat band and the epididymis so tiny as to defy attempts by palpation to establish its contour.

The prostate and seminal vesicles may be so small as to be recognized on rectal palpation only with difficulty and uncertainty. The urinary stream is of small diameter and may not be of great force. In the man castrated after sexual maturation the genitalia remain large save for the scrotum.

In general, penile erections are of limited number and completeness.

Therapeutic Indications. The use of androgens is clearly indicated after bilateral orchiectomy or in severe eunuchoidism.

The benefits from early treatment with endocrine preparations for the boy in his teens who is not exhibiting the usual signs of

sexual maturation have their limitations and dangers. The rationale for the early use of gonadotropic or androgenic therapy in males with less than average sexual maturity at the age of adolescence is the prevention of eunuchoid changes that would otherwise be permanent.

Drug, Dose and Route of Administration.

20 mg. of testosterone propionate in 1 cc. of oil injected intramuscularly six or seven times a week is effective but 20 mg. three times a week has not been found to give good results.

Subcutaneous implantation of testosterone in the form of compressed tablets is economical and requires replacement only at long intervals.

Methyl testosterone by mouth exerts androgenic effects but is more costly.

Percutaneous administration is also being used.

Results from the administration of testosterone propionate.

Pronounced masculinization and disappearance of many of the phenomena characteristic of testicular insufficiency are obtained even in persons castrate for more than two decades or in those whose eunuchoid state has persisted until the middle years of life. Within an hour there are changes in the blood volume and pigments of the skin. Erectile ability may be enhanced, often within a matter of several hours, and spontaneous erections are particularly frequent during the first days after the beginning of treatment.

The genitalia, with the exception of the testes, are stimulated to considerable development.

Muscular development and in some men strength are markedly increased.

The skin becomes flushed and of a darker color. Increased oiliness of skin and hair becomes noticeable. Acne may appear on the face. Growth of secondary sexual hair is rapid, the vocal range and pitch of the eunuchoid approach those of the mature man.

The testes do not assume normal function. Testosterone affords essentially substitution therapy so that administration of the substance must be continued if the results are to be maintained.

Other states of Testicular Dysfunction.

Cryptorchism. Endocrine substances should be expected, on rational grounds, the effect descent only in instances in which the body levels of these substances are low and there is no mechanical adhesion or other permanent barrier to progression of the testicle. The untoward effects of therapy must also be considered. Cryptorchism remains, despite some enthusiasm for treatment with endocrine products, primarily and in most cases a surgical problem.

Sterility. Sterility may be subdivided into factors related to spermatogenesis and factors related to transportation and deposition of sperm in the female reproductive tract.

No endocrine substance now available has been proved adequate for the stimulation of spermatogenesis in the eunuchoid man.

Difficulty of intromission. Testosterone propionate increases the capacity for erections in men with deficient testicular secretions. Though the elicitation of erections in the young and the middle-aged castrate or eunuchoid man is abetted by androgens, the same thing does not happen in old men.

Use of Androgens in other conditions:

- (1) Benign Hypertrophy of the prostate. The results are still under dispute.
- (2) Muscular conditions as myotonia atrophica and genital atrophy. Temporary improvement is noticed. Only a selected type of muscular weakness would be benefitted. Limitations, contraindications and danger.

The use of large doses in a child can result in closure of the epiphyses and in development of male secondary sexual characters. In the sexually mature person exogenous androgen depresses reproductive functions, such as spermatogenesis and gonadotropic secretion in the pituitary.

If large doses are employed in women, masculinization results.

Sense of well-being and euphoria experienced by men during androgen therapy may be a positive danger as the real trouble may be overlooked.

(J. A. M. A.)

Extract.

LOCAL USE OF SULFANILAMIDE.—Long and Dees discuss the local use of sulfanilamide crystals in the office and the hospital. Cases which can be treated in the office are local infections, small lacerations, boils, abscesses and the less severe injuries in which powder can be placed in the wound and the wound sutured without drainage. If the infection and injury seem serious enough, sulfanilamide is also given by mouth. When the use of ointment is indicated in office treatments the authors use equal parts of thoroughly mixed sulfanilamide crystals and hydrous wool fat. The types of cases requiring hospital care are: Crushing and lacerated injuries; in these, after the wound is debrided and scrubbed, it is dusted with sulfanilamide powder and closed without drainage. Compound fractures; after the injured part has been prepared, 20 Gm. of sulfanilamide for adults and proportionally smaller amounts

for children is placed into the fracture site both beneath and on top of the periosteum and the subcutaneous area, wound is closed without drainage and the part is immobilized in a plaster of paris splint. Carbuncles; in these the authors resorted to intravenous anesthesia, thorough incision with the radioknife removal of infected tissue by electrocoagulation and packing with sulfanilamide powder. Incision and drainage and daily dusting of sulfanilamide powder into cavities of local abscesses have shortened the duration of the infection and apparently aided materially in the cure. Appendical and pelvic abscesses were treated most successfully without drainage by incising and irrigating the abscessed cavity, the placing of from 20 to 30 Gm. of sulfanilamide powder into them and closing the abdomen. Peritonitis following acute appendicitis has been treated successfully without any deaths by dusting the sulfanilamide powder into the peritoneal cavity. The absorbability of the drug is proportional to the peritoneal reaction present. The prophylactic use of sulfanilamide, by dusting into the pelvis, in chronic salpingitis, hydrosalpinx, supravaginal hysterectomy and tubo-ovarian abscess has been satisfactory, its use is advantageous as a prophylactic measure following any gastrointestinal surgery with peritoneal soiling.

(Surgery, St. Louis.)

TREATMENT OF SNAKE BITES

BY A. BALAKRISHNA MENON, M.B. B.S.,

Kottayi, Palghat.

Of all emergencies one comes across in general practice the treatment of snake bite is one of the most urgent. To those who practice in cities and towns such an emergent opportunity may never present itself but to such of us who have decided to settle down in villages and rural parts, this is a very common occurrence. While every hour is precious in certain surgical emergencies such as acute abdomen, here, every minute, nay, every second, makes all the difference between life and death to the patient.

Poisonous snakes, which abound in India may, for all practical purposes, be broadly divided into three categories:—

I. *Kraits*.—These are about 1 to 2 feet long with white transverse bands over a black background and which fork off into pairs over the ventral aspect. Generally found among grasses, reeds and stones, they occasionally frequent houses, too, where they come in search of their prey. Their bite is one of the most deadly and is followed by great heat and pain creeping up towards the region of the heart and which ultimately ends in unconsciousness and death.

II. *Vipers*.—There are many varieties and their length may vary anywhere between nine inches to three feet. Their distinguishing features are their triangular head and a short rapidly tapering tail. The body is covered over by irregular white annular rings. They prefer to creep about after dusk and do not move away at the approach of persons as other snakes do. The most famous and deadly of its representatives is the Russels' viper which is also known in Malabar as "payyani" or "chenathandan." This particular variety is very venomous and when disturbed or trodden upon, bites viciously at the victim tearing off the tissues and injecting the deadly contents of its fangs deep into the flesh. The bite is soon accompanied by intense pain at the spot which spreads upwards. There is swelling of the limb and the lymphatic glands draining the area become enlarged and tender. Giddiness, palpitation, restlessness, drowsiness and vomiting follow in due course ultimately ending in unconsciousness and death. This viperine poison is said to affect the circulation and blood is first coagulated and later hæmolyzed. There is bleeding from the capillaries, especially of the mucous membranes, such as those of the gums, nostrils, urethra, rectum and the gastric mucosa.

III. *Cobras*.—These are the hooded reptiles with their famous spectacles spread out on the dorsal aspect of the hood. Generally there are no markings on the body but in some variety especially the 'king cobra' which often grow to a length of twelve feet, some transverse stripes may be noted. The ordinary variety one meets with is about three to four feet long. They are apparently more intelligent than the previously mentioned snakes and move away quickly at the approach of persons. This probably is the reason why cobra bites are less common than those of others. When roused to anger or when at bay it raises its head and anterior portion of the body from the ground, spreads out its hood and poises it gracefully ready to strike. This posture is both fascinating and aweinspiring and is said to hold the victim under its spell. It seldom bites unless provoked and even then gives due warning before it strikes. The bite is very deadly and the effect quite rapid, death occurring anywhere between half to three or four hours. The poison has no effect on blood or bloodvessels, but rapidly affects the central nervous system through the nerves. There is not much pain except a slight burning or tingling sensation at the site of the bite but the patient soon becomes restless. Tingling sensations are felt like lightning in various parts of the body and numbness and tingling are especially noted at the tip of the tongue. This sensation is periodical in its occurrence and this stage is very soon followed by one of collapse and paralysis. The muscles of respiration are paralysed, probably through the medullary centre and the heart-beat becomes slower

and weaker. First respiration and then the heart-beat cease and death finally closes the scene.

General Treatment.—1. Ligature the part well, both above and below the bitten part. A rope, a string, a piece of cloth or a rubber-tubing, whichever comes in handy should be applied like a tourniquet. The idea is to prevent the poison from entering the general circulation.

2. Excision of the part and a portion of the area round about it, if done boldly and without much loss of time, may by itself prevent fatal consequences.

3. The wound site may be scarified in a criss-cross fashion and encouraged to bleed freely, thereby washing out a good portion of the poison.

4. A burning splinter, red-shot charcoal or a live beedi may be freely introduced into the wound and the poison burnt out, if possible. Caustics such as strong acids, alkalies or Potassium Permanganate crystals may be used to the same effect.

5. Some people advocate sucking the wound through the mouth, but if the above methods are done properly and quickly this dangerous procedure need not be adopted since there is always the risk of the poison entering through the soft mucous membrane.

A few or all or a combination of the above methods may well save the life of a patient, if done quickly and efficiently.

Specific Treatment.—I am not going to take up much of the reader's time by describing the varieties of antisera on the market. These antisera are highly elaborated products obtained by immunising the horse against different varieties of poison. They are very costly, difficult to obtain and still more difficult to have their potency kept intact. Such sera are useful only against the particular snake bite for which they have been prepared. More often than not the variety of snake is difficult to be identified and hence the value of serum treatment cannot be assessed beforehand and prognosis can only at best be guarded. Serum treatment, moreover is possible only in cities where one must keep the sera in refrigerators or ice-chambers and snake bite being rare in cities this method of treatment is not much in vogue.

'Tiriyag'—This medicine is a specific for all snake bites and for any other poisonous insect-bites such as those of scorpions, centipedes, spiders or any other poisonous insect. It is a clear, greenish coloured fluid with a smell of camphor and is supplied in half ounce bottles by Dr. Lorbeer's Laboratory, 104 Upper Mall, Lahore. The medicine is priced fairly cheap, Re. 1-4-0 per bottle, and would ordinarily suffice for 3 or 4 snake bite cases. The claims of cure attributed to this medicine have been confirmed by me in my sixty and odd cases treated over a period of seven years. This medicine is an extract from a rare herb, probably a chlorophyll, kept in solution by

some organic solvent. A few drops of this clear fluid when mixed with water become at once turbid and a sticky greenish substance soon separates and adheres to the sides of the vessel. India has been famous from time immemorial in producing such magical cures and there are many people who still possess the secret of such cures, but who keep it only to themselves. This medicine 'Tiriyag' is one such secret, said to have been obtained by Rev. Dr. Lorbeer from a great Himalayan Seer.

Treatment by 'Tiriyag'.—Ten drops of this medicine are mixed with one teaspoonful of water and swallowed by the patient every five minutes. The literature supplied with the bottle advises removal of any ligature before treatment is begun, but I have slightly modified this method. I first give the patient a dose of this medicine and then remove the ligature, so that the release of poison into the circulation may not precede that of the medicinal antidote. The patient should walk about swinging his arms vigorously, thereby hastening to neutralise the poison in the circulation. The bitten area is next scarified and a few drops dropped on to the part, to neutralise the local poison. If the patient is unconscious or drowsy, two assistants should move the arms and legs up and down till the patient regains consciousness and is able to do this himself. If he is unable to swallow, three drops of this clear fluid should be instilled into the nostrils every three minutes until consciousness returns. Vigorous exercising of the limbs is essential for bringing about a rapid cure. Heat in the head and drowsiness should be treated by dashing or pouring cold water on the face or head. If the patient has been given any other medicinal antidote such as Chillies or Neem-leaves, he should first be induced to vomit these by giving large quantities of salt-water or tickling his fauces. 'Tiriyag' acts best on an empty stomach. If the system contains poison, the medicine will taste more and more bitter. (The natural taste of this medicine is bitter). The pain will also come down by degrees till only the bitten area is slightly painful and ultimately this pain disappears. Medicine ought to be given till this stage is reached and should be continued for one or two doses more. He is advised to take only a glass of milk that night and a good purgative the next morning. No further treatment is necessary. The time taken for the cure may vary between $\frac{1}{2}$ to 2 hours but may also be greater or less, depending on the severity of the bite or the time elapsed between the bite and starting the treatment.

(Antiseptic)

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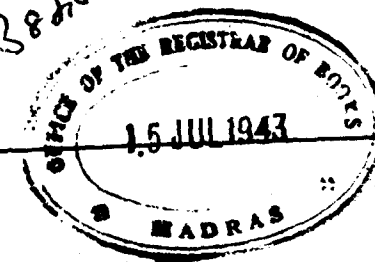
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NO. 6

INOCULATION AGAINST TYPHOID FEVER*

A CRITICISM OF ITS VALUE AND SCIENTIFIC BASIS

M. BECDOW BAYLY, M. R. C. S., L. R. C. P.

Reactions following inoculation and other disadvantages.

"T. A. B. inoculation, as practised in this country" the *Lancet*, June 15, 1940, reminded us in its editorial columns, "is not devoid of reaction, which may be severe enough to cause several days' invalidity" (p. 1008).

Although repeated attempts have been made to devise a vaccine which should be free from severe reactions, even at the present time these are sufficiently disabling to warrant the Army authorities in requiring soldiers to rest for 48 hours after anti-typhoid inoculation.* Some idea of the serious effect upon the health of troops during their period of training may be gathered from the statement of Lieut.-Colonel H. C. Metcalfe in a letter to *The Times* (October 28, 1939):—

"The first ten days of a man's service is of little account as he is probably suffering from the effects of vaccination and inoculation."

"Several days' invalidity" are the words used by the Editor of the *Lancet* in regard to the after-effects of anti-typhoid inoculation.

In Parke Davis's brochure, *Vaccine and Serum Therapy* (1935), we are informed that "owing to the fact that these vaccines contain toxic microbes, it is to be expected that after inoculation of a relatively large dose some amount of constitutional disturbance and of inflammatory reaction at the site of inoculation will ensue."

As recently as 1932, regulations had to be issued for the Medical Service of the Army regarding the precautions that should be taken after typhoid and paratyphoid inoculations. The following is taken from an article on Anti-typhoid Inoculation by Brevet-Colonel H. Marrian Perry, O. B. E., K. H. S., Major B. T. Findlay, and Major H. J. Bensted, M.C., R. A. M. C. the section is headed "Reactions following Inoculation":—

"Some observations are desirable on the subject of the local and general reactions that are liable to follow the inoculation of typhoid-paratyphoid vaccine. In the earlier days, when the vaccine

*[Condensed from Vol. XV No. 12].

*(See *Hansard*, Vol. 356 January 30, 1940).

was first introduced into the Army, the severity of the symptoms following the injection of killed broth cultures proved a marked deterrent to this form of Prophylactic. With further experience, the intensity of these reactions was diminished.

"Notwithstanding this modification complaints were still received from time to time regarding severe general and local reactions. . . . It became evident that indulgence in any severe form of exercise during the 48 hours following inoculation was one of the most important factors in producing undue reactions."

The authors referred to "severe reactions following the inoculation of troops on board ship," in view of which they suggested that "it seems advisable that all such injections should be completed before embarkation."

In some cases it was observed that malaise, rise of temperature and increased local reactions are complained of a few days later than the usual period. It was further explained that individuals are met with who "display an especial sensitivity towards the inoculation of foreign proteins despite any precautions that can be taken."

Long ago, Dr. J. S. Bury pointed out that "the vaccine may light up of latent tuberculosis, may cause a rise of temperature, and a recrudescence of intestinal symptoms in persons who have suffered from enteric, and may lead to the development of albuminuric retinitis in subjects of Bright's disease."

He mentioned a sudden death from oedema of the glottis after inoculations and said that "very rarely symptoms of disease have been observed to develop in previously healthy persons soon after inoculation." He also reported nervous symptoms resembling tabes; in "nearly all (cases) the triple vaccine was used and the symptoms appeared suddenly within a few hours of the inoculation."

Dr. Carmalt Jones, in *Organic Substances, Sera and Vaccines* (1932) wrote in regard to reactions:—

"The sensations are those of an acute febrile attack, malaise, headache, facial pains, asthma. Some people stand the inoculation badly, and there is some times a rise in temperature, and occasionally a rigor. In the majority of cases there is fairly complete recovery in 18 hours. Occasionally pain is referred to the right iliac fossa, and the diagnosis of acute appendicitis may be considered."

Among reactions mentioned by Bosenquet and Fyre in *Serums Vaccine and Toxines* (1910) are redness and pain at the site of inoculation, lymphangitis and enlargement of neighbouring glands, nausea and even vomiting, considerable feeling of illness, and rise of temperature. "Occasionally a condition approaching collapse is observed."

According to the British Army Anti-Typhoid Commission (1912) inoculation in the flank made walking impossible when the reaction

was severe and "Many individuals were... rendered helpless for a short time."

In the *British Medical Journal*, November 14, 1914, it was reported that Dr. Goddard found that fully 60 per cent. of the reservists between 25 and 35 years of age fell ill from inoculation, and "so marked was the reaction, local and general, that he thought it inadvisable to vaccinate any of the Territorial soldiers aged from 35 upwards."

Among other untoward results of inoculation which have been recorded are polyneuritis, catarrhal jaundice, septic fever, enteric fever, inflammation of the appendix, synovitis, mental disorders, acute ascending (Landry's) paralysis."

It was reported in the *Sydney Morning Herald* November 27, 1939, that "almost every man at Ingleburn, from the Brigadier down, suffered on Saturday from the after-effects of the second injection against typhoid. Two of the men fainted, and many developed high temperatures."

In its issue of October 1940, *Better Health*, the official organ of the Central Council for Health Education, referred to mass inoculation against typhoid fever and commented upon the fact that "there is generally a marked local 'reaction' of pain and swelling, with some general upset." The writer concluded that "the pain and inconvenience would probably deter many people from having their children inoculated even if they underwent inoculation themselves."

It is significant that the Editor of the *British Medical Journal*, on November 30, 1940, suggested that it might be wise to review the question of dosage and consider whether a smaller dose of vaccine might be sufficiently effective. As he explained, "Though the average reaction produced is a trivial thing in comparison with the advantage gained, it would make things much easier if it could be reduced to negligible proportions, involving no interruption at all in full working capacity."

INOCULATION AT INDIVIDUAL'S OWN RISK.

So alive have public authorities become to the risk of untoward reactions that in the case of Southampton where the Medical Officer of health has made arrangements for the mass inoculation against the typhoid group each applicant has to sign the following certificate that he or she accepts inoculation at his own risk:—

"I wish to have myself / my child inoculated against the typhoid group of fevers by the means which the Medical Officer of Health or his representatives consider most suitable. I understand that inoculation sometimes produces local or general reactions which may temporarily incapacitate, but I agree that the mayor, aldermen and the burgesses of the Borough of Southampton, or any of their officers, shall not be held responsible for any such reactions or incapacity or any loss in consequence thereof or arising thereout." (The Lancet, Oct, 19, 1940, p. 497).

Referring to these reactions in the *British Medical Journal*, Jan. 18, 1941, Dr. H. C. Maurice Williams, M. O. H. for Southampton, classified them as follows:—

(1) Slight local reactions—stiffness of the arm with local redness for a period lasting up to 48 hours.

(2) Severe local reactions—pain and stiffness exceeding 48 hours, with redness and swelling extending more than two inches from the site of injection.

(3) General reaction.—This took several forms, the most common being a feeling of malaise, nausea, giddiness, shivers and 'flu' it concluded in a few cases abdominal pain with diarrhoea, vomiting and occasional erythematous urticarial rashes, the last-named being more marked in-allergic subjects.

(4) Combined reactions—one of the local reactions with a general reaction.

Of the 10,032 inoculated persons investigated, 6,253 had slight local reactions, 208 had severe local reactions, and 2,860 had combined reactions; 711 had no reactions. These figures show that over a quarter of the persons investigated at Southampton felt really ill after inoculation.

DEATH MAY FOLLOW INOCULATION

Many deaths following immediately or within a very short time after inoculation have occurred, but at the subsequent inquest it is the usual though not invariable practice to completely exonerate inoculation from blame in the matter.

Mr. de Wet, Minister of Justice in the Union Legislature of South Africa, admitted in reply to a question on May 9, 1916, that he was aware "that two deaths at the military hospital in the Cape, and six deaths have occurred on a troopship, en route to Bombay. All these deaths are due to anti-typhoid inoculation. In addition to those who have died, there have been several cases where the men have been seriously ill from the same cause" (Included in the latter group were four European officers and nine men, according to the *Daily Express*, July 2, 1917).

It will be sufficient to cite two typical recent cases which have occurred to this country: On September 9, 1939, Archie Mitchell, aged 39, a sergeant in the Royal Artillery, died at Colchester of anaphylactic shock produced by anti-typhoid inoculation, the cause of death being so stated on the death certificate.

The report of an inquest, held by the South Leicestershire Coroner, which appeared in the *Nottingham Journal*, May 7, 1940, disclosed that Private Alfred Carlisle, aged 35, a strongly built man who had been passed as fit by five doctors (by a Civil Medical Board as Grade 1, and by an Army Board as A. I.), died six hours after inoculation with a second dose of vaccine.

INOCULATION MAY INCREASE SUSCEPTIBILITY

"There is probably a refractory period following T. A. B. immunisation during which susceptibility is increased," wrote Dr. F. F. Erskine, R. M. O., Charing Cross Hospital; his comment was that this fact, added to the impracticability of inoculating a large number of people (owing to the disorganisation of industry involved), had led him "to believe that a dangerous feeling of false security is created by the idea of holding reserves of T. A. B. for use in an area of special risk."

INOCULATION MAY AGGRAVATE THE DISEASE

An article in the *British Medical Journal*, Nov. 20, 1937, warns its readers that "untoward effects may follow inoculation if a dose of vaccine or its reaction should coincide with the outset of an attack; aggravation rather than attenuation may be the sequel" (p. 1029).

Further evidence of "untoward" modification of the disease is provided by a report by Dr. Loreti of four cases of typhoid which occurred during the Abyssinian campaign in inoculated Italian soldiers. It is stated in this *Report* that the attack was "modified by the inoculation," but as three out of the four cases died, it seems obvious that this was surely in the direction of increasing rather than decreasing the severity of the attacks.

Attention has already been drawn to evidence that anti-typhoid inoculation may render soldiers susceptible to trench fever.

Disadvantages peculiar to the use of vaccine as a therapeutic measure in typhoid fever will be found described in the next Section.

VACCINE AND SERUM TREATMENT OF TYPHOID FEVER.

In an address, entitled "Typhoid Fever: Its Clinical Aspects," delivered before the Croydon Division of the British Medical Association on March 22, 1938, Sri William Willcox made the following observations:—

"In typhoid infections the body seems to be able gradually to establish its own immunity, and careful treatment on general lines is much the safest procedure. Any attempt to hurry matters may be fraught with danger and result in disastrous complications.

"In an attack of typhoid fever vaccine should be entirely avoided. I have on many occasions seen them used, but never with benefit. Often a rigor and a marked rise of temperature will immediately follow even a small dose of vaccine, and the toxic symptoms are much increased... It has been my experience not only with typhoid fever, but in the case of infections...such as paratyphoid, parenteric and food poisoning, that very adverse results are obtained by the administration of vaccine in the acute stages of the illness.

"Serum from convalescent patients has been administered, but the results have not been of notable benefit. The use of a foreign serum appears to be dangerous in that the immunity may be disturbed. In one case under my care the administration of a small dose of

polyvalent antistreptococcal serum was followed by severe hæmorrhages from the bowel and nose, with fatal results.

"... Antisera have been prepared from the horse, and these have been shown to be of value in typhoid infection in animals (mice, etc.). At the present time the value of these antisera in human subjects is still *sub judice*, and there is no evidence that mortality is reduced by their use. The danger of a prejudicial disturbance of the delicate mechanism of immunity in the human subject appears to outweigh the possibility of benefit.

S. J. Woodall declared in an article on typhoid fever in 1939, that in regard to this question:—

"Serum and vaccine therapy have been tried in typhoid fever but without any striking success. No effective serum has yet been prepared, and the vaccines are helpful chiefly in those cases in which progress towards recovery is slow Goodall regards the action of the vaccine as non-specific, an instance of protein shock. He adds that 'for every case that has apparently responded favourably to this treatment I have seen at least ten in which no effect, good or bad, has been produced, and the case has proceeded in the usual way of an enteric, case.'"

The foregoing statement is the more remarkable since General Harvey, Director of Pathology in the Army, is of the opinion that vaccine therapy is of distinct value in typhoid and Netter (1913) has summarised the reports of no fewer than 50 different authors with respect to 1,300 cases of typhoid fever so treated, and found that all but four of these authors found in favour of the use of the vaccine.

On the other hand, J. F. D. Shrewsbury, lecturer in Bacteriology, Birmingham University, stated in an article on "The Use of Vaccines" in the *MEDICAL WORLD*, June 12, 1931: "At the present time there is a general consensus of opinion among bacteriologists that vaccine treatment is of little value, and may even be definitely harmful, in the acute stage of all bacteriological infections"

He explained that "the claims made for successful vaccine treatment are legion, unfortunately, they are often not supported by any scientific proofs"

Professor Ward was reported in the *Medical Journal of Australia* January 8, 1938, as declaring before the New South Wales Branch of the B. M. A., that:—

"He did not believe that vaccines had any specific therapeutic value, and pointed out that quite apart from the fact that it was illogical to inject more organisms into a patient already infected, it was curious that the value of therapeutic vaccines was not more firmly established after 30 years experience and it was still more curious there was no definite evidence in animal experiments in favour of their use."



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CARRIERS.

P. N. LAHA, M.D. (PAT.)

From the Department of Medicine, Medical College, Agra.

INTRODUCTION.

In any infection the end result may either be the patient's death, or the extinction of the infection or the survival of both the patient and the infecting agent. In the last condition the patient continues to harbour the organisms in his body and is usually called a carrier. A carrier is a human being who although not ill, is infected with and capable of disseminating the causal microorganism or parasite of some disease. He need not have been a patient as one may become a carrier simply by coming in contact with a patient.

In 1889-90 it was observed that diphtheria bacilli might be found in the throat of a healthy person. The search for, and discovery of carriers was immensely stimulated by Frosch's suggestion (1903-4), and Drigalski's proof (1940), that typhoid bacilli could be propagated in the human body and discharged long after recovery from the typhoid fever. Prior to these observations Koch had urged the proposition that an ambulant convalescent was the chief disseminator of the disease. Koch's anti-typhoid campaign and Conradi's researches (1909) followed by similar works in Great Britain by Ledingham (1912) and elsewhere, and the recognition of paratyphoid carriers by Conradi (1906), established the predominating importance of carriers in the enteric group of diseases. Smith (1934) pointed out with emphasis that successful parasitism, from the point of view of the invader, involves a mutual tolerance of the host and the parasite, so that both survive with a minimum of inconvenience to either. This state of equilibrium, approaching symbiosis, is responsible for the more dangerous type of carriers. It appears to be the final stage in the evolution of successful parasitism. Carriers constitute the most potent source of danger to a community.

CARRIERS IN DIFFERENT DISEASES.

Typhoid Fever.—The subject of carriers in typhoid fever has been reviewed exhaustively by Browning and his collaborators (1933), and what follows is based largely upon their monograph.

Typhoid carriers may be either temporary—those who excrete the organisms for short periods during or after convalescence or chronic, if this period extends to six months after the acute attack. If the excretion of the organisms extends to a year it is unlikely to clear up spontaneously and will become permanent.

Carriers are considered under two primary groups as 'fæcal' (intestinal) and 'urinary' excretors. Occasionally the organisms may be discharged from abscesses or sinuses. The fæcal excretors may be further divided into (i) biliary carriers and (ii) true intestinal carriers. The latter are much more uncommon than the former,

but, as Browning points out that their recognition is important since a proportion of failures to obtain cure by cholecystotomy may lead by elimination to the diagnosis of true intestinal carrier. Children rarely become chronic carriers.

Urinary excretors are much less common than fæcal excretors. Indeed a person may go through a typhoid infection and yet manifest no symptoms of the disease. Such a person may become a carrier though possessing no knowledge of the fact that he has suffered from this infection. They are particularly dangerous when they happened to be engaged in handling food or milk. Many localised epidemics have been traced to such carriers.

The Journal of American Medical Association (1938, 111:2023) reports the death at the age of 70 of Miss Marry Mallon, commonly known as "Typhoid Mary" who was the best known example of a typhoid carrier. During her employment as cook in various households and institutions she gave rise to at least ten outbreaks with 51 cases, and probably more until she was interned in a New York hospital for the last twenty-four years of her life. A full account of her was published by Soper (1919).

The detection of carriers rests entirely with the pathologist. Culture of the stool, urine and detection of Vi-agglutinins in the serum are to be employed for this purpose.

Bacillary Dysentery.—Manson-Bahr (1939) classifies the carriers of bacillary dysentery as healthy, convalescent, relapsing and chronic. The *healthy carrier* is one who passes dysentery bacilli along with fæces without having suffered from an acute attack of the disease. Clinically the person is healthy. This group is rare, this method of spread is also not of great importance for since the cases reported by Kruse (1900), Conradi (1903) and Mayer (1911) little work has appeared, except that by Vazquez-Colet (1925) in the Philippines. The organisms may, however, appear in the fæces in an intermittent manner, as is shown by Verzar and Weszeczky (1916). As regards the bacteriology in such carriers the majority harbours Flexner's bacilli. The *convalescent carriers* constitute the largest bulk. A convalescent carrier is a person who, subsequently to an attack of bacillary dysentery continues to pass viable bacilli in the fæces, usually together with some mucus and blood. Saguepee (1910) considers that the formes frustes, the slight and clinically almost unrecognizable forms of the disease, play an important part in its spread. Convalescent carriers are always the most important source of small epidemics. Thus Stitt (1922) quotes an instance of a small epidemic of Shiga type recorded by Friedmann (1913); an infected soldier returned to barracks after furlough, and this resulted in 86 cases in the man's regiment, 49 of which belonged to his own squadron. Mild and unrecognised cases are also important factors in the spread of epidemics. The *relapsing carrier* is one by whom dysentery bacilli

are passed in the faeces owing to renewed activity of the organisms in the intestinal canal. Such cases have been reported by Hudson and Manson-Bahr (1939). The *chronic carrier* may be defined as one who is incompletely cured of the disease in a clinical sense, and continues to pass dysentery bacilli in his faeces. According to Fletcher and Mackinnon (1918) Shiga-bacillus carriers were rare in a group of 935 war convalescents, only 1.39 per cent, while 61 were Flexner carriers.

The carrier state in bacillary dysentery does not as a rule persist for any great length of time. According to Perry (1925) the carrier state usually persisted from four to six months, and at the end of a year only four per cent were still carrying dysentery bacilli; in the case of Flexner infection, it was higher, viz., seven percent. The carriers can be detected from the history of having had suffered from dysentery or suffering from it at the time of examination, microscopical and bacteriological examination of stool, and agglutination of their serum with the homologous organisms.

Cholera.—The cholera vibrios are passed in enormous numbers in the faeces during the early part of the disease. They usually disappear after from the fourth to the fourteenth day, but may remain for one or two months. These are convalescent carriers. Chronic carriers are rare. Healthy or passive carriers occur and are an important means of spreading the infection; they may also develop the disease. McLaughlin (1908) found numerous carriers in epidemic centres in the Philippine islands—6 to 7 per cent among healthy individuals living in infected neighbourhoods in Manila—but rare in neighbourhoods having few cases. Carriers are the principal factor in the spread of epidemic cholera and in keeping the infection alive. Many carriers continue to excrete the vibrios for a considerable time after recovery, sometimes for two months but rarely more than 20 or 30 days. It was estimated in the Naples epidemic in 1911, the 90 per cent of the cases were due to direct contact with patients or healthy carriers; while in the Colombo outbreak in 1926, of 442 contacts examined 10 per cent were found to be carriers of *V. cholera*. Fortunately the bacilli usually completely disappear from the stools of convalescent patients in 4 or 5 days, but Grieg (1942) found virulent organisms in the stools of 36 per cent of the patients shortly before their discharge from hospital during an epidemic in Puri; so that the disease was rapidly disseminated by the convalescents travelling by rail to the central provinces several hundred miles away. In Mesopotamia, Mackie and Trasler found that only 7.2 per cent of cholera patients remained carriers for more than 10 days after an attack, and only 2 out of several hundreds continued to be so upto 5 and 7 weeks. Persistent carriers happily do not occur to the same extent as after typhoid fever. The same observers found that 2 per cent of the healthy contacts with cholera patients became carriers without having suffered from an attack of cholera.

For the detection of the carriers specimens are best obtained by administering a saline cathartic or by using a rectal tube with "eyes" cut into it. Several methods of investigation, based upon the facility with which the vibrio grows upon Dunham's alkaline peptone solution are employed. Particles of faeces are planted in this medium and subsequently examined for commashaped microorganisms. If found, the diagnosis is presumptive. Pure cultures should then be made and studied for agglutination.

• *Diphtheria.*—It must be remembered that the bacilli may remain in the throat long after the patient is himself quite well, and hence risk of contagion remains. Sometimes a period of several weeks elapses before the patient is free but 50 per cent lose them at the same time as the membrane, not more than 7 per cent retain them for one month, and more than 1 or 2 per cent for three months. Diphtheria is a 'contact' infection, the common mode of being by droplet spray. Overcrowding, especially in bedrooms and dormitories, facilitates infection in this manner. All carriers are not equally effective distributors of the disease, intimate contact and addiction to such habits as kissing, sneezing, spitting and pencil suckling are of importance in the spread of the disease. It is believed that the nasal carrier is an especial source of danger in this respect. Throat and nose cultures from all exposed persons and from all persons in an institutional epidemic should be made. All positive carriers based upon morphological diagnosis should be quarantined. At a later date when time permits, the carriers of avirulent bacilli may be released. It is sometimes necessary to go through a camp or school twice, thrice or oftener to detect all the carriers or to discover new ones. Most of the dangerous carriers even in a metropolitan city can be discovered by taking cultures from the persons associated with cases. Mere presence of diphtheria bacilli in persons does not necessarily mean that they are virulent. They must be tested for the virulence on the guinea pig.

Cerebrospinal fever.—Epidemics of cerebrospinal fever are marked by several features peculiar to the disease. For a long time these features baffled explanation until the existence of carriers became recognised and supplied the solution to the epidemiological problem. Amongst these curious features may be mentioned the erratic nature of the outbreaks, the inability to trace the connection between one epidemic and the other, the relative or even total escape of certain localities close to others in which the disease was rife, and the small proportion of persons affected in any one district. In closed communities, such as camps and especially in times of war, the disease finds a suitable soil. In such communities the majority of individuals may be carriers and only a small minority may be infected. In cities the morbidity is not more than 1 or 2 per 10,000 of the population. The explanation lies in the fact that the receptivity of the throat is

high, while the susceptibility of the meninges is low. The carriers, therefore, always greatly outnumber the patients. It has been found that a carrier epidemic always appears in advance of and in association with a case epidemic. In the mode of infection of the meninges the first stage is the infection of the upper respiratory tract, in particular the upper part of the nasopharynx. If the process stops at this stage, the result is the production of a carrier.

Pneumonia.—The American observers have shown that 40 per cent of contacts with cases of pneumonia belonging to types I & II may harbour the corresponding organism for an average period of 23 days and that they may develop pneumonia from it. They have further shown that a convalescent patient may carry pathogenic pneumococci in his mouth for as long as 90 days from the onset of the disease. So we see that pneumonia is capable of being spread by carriers, and by convalescent patients.

Scarlet fever.—Intermediary carriers have on occasions spread the disease without otherwise showing signs of infection. On rare occasions, convalescents although apparently healthy, have for months remained capable of transmitting the fever. It appears that the infectivity of carriers is intermittent. Convalescent carriers are responsible for something less than 3 per cent of the cases traced in fever hospitals.

Brucelliosis.—Out of 525 dock hands examined by Shaw (1941) in Malta, 79 gave positive agglutination reactions, whilst 9 out of 22 of the specially tested showed the organisms either in the blood or urine or both. Such cases constitute human carriers.

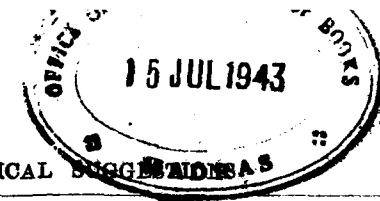
Whooping Cough.—On rare occasion convalescents are said to have acted as carriers.

Typhus.—Carriers of typhus are always verminous persons, Nicolle (1924) described the 'infections inapparentes' with relation to typhus fever. It is a stage earlier in the evolution of successful parasitism.

Acute Anterior Polio-myelitis.—Carriers of the disease, who do not themselves suffer, but from whose respiratory passages the virus of the disease can be recovered, are probably common, and these carriers are perhaps the sole vectors in the propagation of the disease.

Epidemic Encephalitis.—In its etiology no example of case-to-case infection is available. It is presumed that infection takes place from human vectors alone and by droplet infection. Economo and Levaditi (1937) consider that the healthy carriers and those in the presymptomatic stage of the disease are capable of transmitting the infection.

Helminths.—Carriers of helminths (ascaris, hookworm, trematodes, & schistosomes) are abundant. In the United Provinces according



to Chandler (1939) 57-93 per cent, and according to Megaw (1939) 20-99 per cent of population are infected with ankylostoma duodenale. Mild infection does not do much harm to patients but undoubtedly constitutes a great source of danger to the community when they act as carriers. Promiscuous habit of passing stools on fields is the cause of infecting the people. The economic loss to India caused by helminthic infection is tremendous and probably stands third in this respect next to tuberculosis and malaria. Helminthic infection *per se* does not kill people but the concomittant rundown in health with extreme degree of anaemia makes them easy prey to other diseases. The villagers must be taught the mode of such infection and above all the habit of defaecating on open fields must be stopped and some sort of foot wear must be used by them.

Amoebiasis.—It has been suggested [Kuenen and Swellengrebel (1913), Woodcock (1915) and Brug (1922)] that occasionally *E. histolytica* may live in a state of commensalism, feeding on the bacterial content of the gut, and applied to the surface of the mucosa instead of burrowing into the deeper tissues. The knowledge that the amoebæ will ingest, in the culture tube, bacterial organisms certainly lends support to this view, but until further and more conclusive evidence is adduced, *E. histolytica* must remain a definitely pathogenic agent and a tissue parasite. The carrier question is of vital importance in the spread of the disease. It is important to remember that the term "carrier" is used in a somewhat peculiar sense in reference to amoebiasis. The term has a definite and special meaning, which differs from that with which it is often used by bacteriologists. It would be remembered if the host "carries" anything, it is obviously the amoebæ in his gut wall. He is therefore, correctly called a carrier of *E. histolytica*, or an "amoebic carrier"; but to call him a "cyst carrier"—as is so often done—is obviously inappropriate. The carriers have a great practical importance in the etiology of amoebiasis as they are the people who are responsible for the spread of the disease. A carrier can be recognised by the examination of his or her stool preferably after a saline purgative.

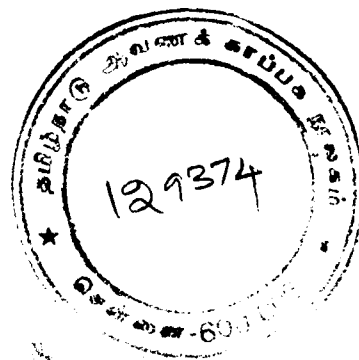
COMMENTS.

This group of diseases is the most prevalent and damaging of all the infections to which flesh is heir. Man is the source and fountain head of these infections. Each case is a focus of infection—a potential epidemic. The group is properly called contact diseases; they are contagious but in varying degree, limiting the number of persons who come in contact with the patient will lessen the number of cases of carriers. These infections are spread not only by mild and missed cases, but are often particularly communicable during the early stages before the diagnosis is clear.

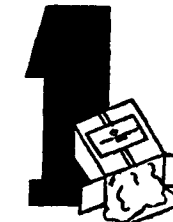
Endemicity of a disease is maintained by carriers. The outbreak of epidemics is actually composed of a carrier epidemic and a clinical

epidemic. From epidemic and endemic outbreaks the carrier-rate rises. The rise in carrier-rate is only a forerunner of the future epidemic and endemic outbreak of diseases which take away millions of people and leave still greater number of millions with maimed, disordered and worn out bodies which entail a tremendous economic loss upon the country. There is little doubt that from the epidemic cases, or from a smouldering infection fresh epidemics light up. By whatever means the machinery is set in motion, it is clear that a necessary precedent to an epidemic is a considerable collection of carriers whence there is the transference of the causal organism to a fresh host. Thus we see that the carriers play a conspicuous role in the perpetuation of a vicious circle of endemic and epidemic outbreak of diseases. The education of the public concerning certain sanitary habits should, therefore, be carried out. These include the danger of spitting promiscuously and of kissing; the proper care to be exercised in sneezing and coughing; the peril in the common drinking cups, the roller towel; and the habit of placing unnecessary things in the mouth, especially the fingers. Restaurants, hotels and soda fountains should be required to scald all glasses, cups, spoons etc., every time they are used. Lynch and Cumming emphasize the importance of the sputum-borne diseases through hand-to-mouth infection and the use of scalding water to wash mess kits and dishes in hotels, restaurants etc. War against disease demands the greatest attention in getting rid of the carriers. If we can prevent people from becoming carriers, we shall be able to get rid of numerous infectious diseases. With the march of progress in the knowledge of medicine many a specific drug has been found out, but there can be no better remedy than the prevention of diseases. Every word of the old English adage, 'prevention is better than cure' is worth in gold. This is in essence the whole argument for the culture of healthy principles of personal and social hygiene by which we can prevent many disease which are undoubtedly preventable.

Journal I.M.A., April 1943.



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ENCEPHALOPATHY FOLLOWING NEOARSPHENAMINE.

J. A. TUTA AND JOSEPH STAGMAN. AM. J. CLIN. PATH., BALTIMORE.

The authors report two cases of encephalopathy following neoarsphenamine, one case with a fatal outcome and the other with recovery.

The fatal case was that of a white woman, aged 35, who entered a hospital in a comatose state. The day before admission she began to talk queerly, and on occasions she could not finish statements she had started. She slept well the night before, was conscious for a short time in the morning, and then lapsed into a comatose state and could not be aroused. The blood pressure was 130 systolic and 90 diastolic. There was considerable salivation. The spinal fluid was blood-tinged. The Wassermann and Kahn tests of the spinal fluid were negative. The patient had received 3 courses of neoarsphenamine. The third injection (0.6 gm.) of neoarsphenamine of the third course had been given 10 days before the onset of symptoms. The previous 2 injections of this course had been 0.30 and 0.45 gm. of neoarsphenamine respectively.

Treatment consisted of intravenous injections of hypertonic glucose solution and sodium thiosulfate and the administration of coramine, adrenalin hydrochloride, and atropine sulfate. The temperature, pulse, and respiration rose steadily; and shortly before her death on April 3, the temperature was 107° F., pulse 140, and respiration 40.

At autopsy, it was found that the leptomeninges were markedly congested. There was a subarachnoid hemorrhage over the left frontal lobe covering an area of 5 by 4 cm. with adherent blood clots on the under surface of the dura mater at this point. Palpation revealed an area of softening and hemorrhage 2½ cm. in diameter in the left frontal lobe beginning at the Sylvian fissure. It was located in the area of the radiation of the corpus striatum on the left side, lateral to the caput of the caudate nucleus and the frontal portion of the internal capsule. Posteriorly the large hemorrhagic area just touched the external capsule. Adjacent to the large hemorrhage the white matter of the brain showed color changes varying from yellow to brown. In the adjacent white matter there were numerous small pin-point hemorrhages which continued anteriorly to the tip of the left frontal lobe. The anatomic diagnosis was acute hemorrhagic encephalitis (following arsphenamine)-hyperemia of the leptomeninges; focal areas of bronchopneumonia, edema and passive congestion of the lungs; fatty degeneration of

the liver; cloudy swelling of the kidneys; small cortical adenoma of the left adrenal and intramural uterine fibromyomata.

The patient who recovered was a single white woman, aged 28, who was admitted to hospital in a semicomatose state and with generalized convulsions. Two weeks previously her blood Wassermann and Kahn tests were found to be positive. Four bismuth and 3 arsphenamine injections had been given prior to admission to hospital. The third injection (0.45 gm.) of neoarsphenamine was given 48 hours before the comatose state developed. Therapy for the convulsions consisted of calcium gluconate, intravenous 5 percent glucose with saline, regular insulin, and a blood transfusion of 500 cc. of citrated blood. The temperature rose to 105° F. the day following admission to hospital, and the next day it was 104° F. with a pulse of 100 and a respiration rate of 28. There was a slight rigidity of the neck. On the day following, the patient's condition was improved, and she could answer some questions, but she was irrational at times. Her temperature was 101° F. The next day she was unruly and had hallucinations. Three days later she left the hospital. Her temperature was normal, but her mind was still confused. After several days the mental state cleared up and there was no evidence of mental disturbance 6 months later. Bismuth therapy was resumed.

From available physiologic and pathologic data in such cases, a relationship is thought to exist between the relatively mild vasomotor or nitritoid crises and progressive vascular changes leading to cerebral edema followed by hemorrhagic infiltrations. Treatment with adrenalin, calcium gluconate, sodium thiosulfate, and intravenous hypertonic glucose solutions instituted at the first signs of cerebral involvement, may decrease the high mortality. Judicious use of lumbar puncture has been advocated by some authors.

TOXIC MANIFESTATIONS IN THE NEWBORN INFANT FOLLOWING PLACENTAL TRANSMISSION OF SULFANILAMIDE. WITH A REPORT OF 2 CASES SIMULATING ERYTHROBLASTOSIS FETALIS.

ARTHUR M. GINZLER AND CHARLES CHESNER.

AM. J. OBST. & GYNEC., ST. LOUIS, 44: 46-55, JULY 1942.

Since it has been demonstrated that sulfanilamide, when given to a pregnant woman, passes through the placenta and is soon present in the blood and tissues of the fetus in concentrations equal to those in the mother, it would seem that the fetus and newborn child would be exposed to the hazards of possible toxic effects from these drugs. The authors report two cases in which the newborn infants seemed to demonstrate such effects.

A pregnant Negro woman received a total of 105 grains of sulfanilamide in treatment of an infection of the amniotic sac. Three

hours after the last dose spontaneous delivery of an apparently normal infant occurred. The child seemed normal until the fourth day when its temperature rose, and it appeared icteric and in poor condition. The blood showed a hemoglobin content of 13.9 gm. per 100 cc. and a count of 3,950,000 erythrocytes, 33,350 leukocytes, and 270,000 platelets, with a differential count of 51 percent segmented and 20 percent nonsegmented neutrophilic leukocytes, 2 percent myelocytes, 22 percent lymphocytes, and 5 percent monocytes. The smear showed polychromesia, and 34 nucleated erythrocytes per 100 leukocytes, megaloblasts predominating. On the fifth day the sulfanilamide determination of the blood showed 1.5 mg. percent although the child had not been given the drug directly. Three days later the hemoglobin content was 16.5 gm., the blood count 4,000,000 erythrocytes and 23,950 leukocytes, with 51 percent segmented and 18 percent non-segmented neutrophils, 24 percent lymphocytes and 7 percent monocytes, with 27 nucleated erythrocytes per 100 leukocytes. The jaundice increased, and the child's condition became increasingly poor until death occurred on the eighth day. The final diagnosis was erythroblastosis fetalis. After autopsy, however the pathologic findings, especially in the liver and spleen, were sufficient to negate this diagnosis and to show instead that the case was one of acute yellow atrophy of the liver associated with focal necrosis of the adrenals, spleen, and lung. These changes, the authors believe, fully justified attributing them to the sulfanilamide which had been transmitted from mother to infant through the placenta and which had been demonstrated in the infant's blood on the fifth day of life.

The second case was that of a full-term, spontaneously delivered, white infant, 3½ weeks old, who was admitted to the Sydenham Hospital because of marked pallor since birth and the development of a faintly yellow color in the skin. It was learned that the mother had taken 57 tablets of sulfanilamide shortly before delivery. On admission the child's blood showed a hemoglobin content of 6.8 gm. per 100 cc. and a count of 2,020,000 erythrocytes and 8,600 leukocytes, with 10 percent nonsegmented and 21 percent segmented neutrophils, 1 percent eosinophils, 60 percent lymphocytes, and 8 percent monocytes; there were 41 nucleated erythrocytes per 100 leukocytes. Two later counts showed similar pictures, except that the hemoglobin had fallen to 5.6 gm. and the erythrocytes to 1,590,000. An indirect van den Bergh test gave 1.6 mg. percent of bilirubin; the direct was negative. The clinical diagnosis was erythroblastosis fetalis. The child was treated by diet with iron and liver and 4 small transfusions and made a complete recovery in 2 months. In this case the excellent results from the treatment, considered with the results of the necropsy in the first case, caused doubts as to the diagnosis. After further study it was felt that this

case also represented a severe hemolytic anemia due to placenta-transmitted sulfanilamide.

The authors say that inasmuch as sulfapyridine has been shown to pass through the placenta as freely as sulfanilamide, the danger of producing toxic reactions in the fetus or newborn infant must be considered possible with all the sulfonamides when given to a pregnant woman.

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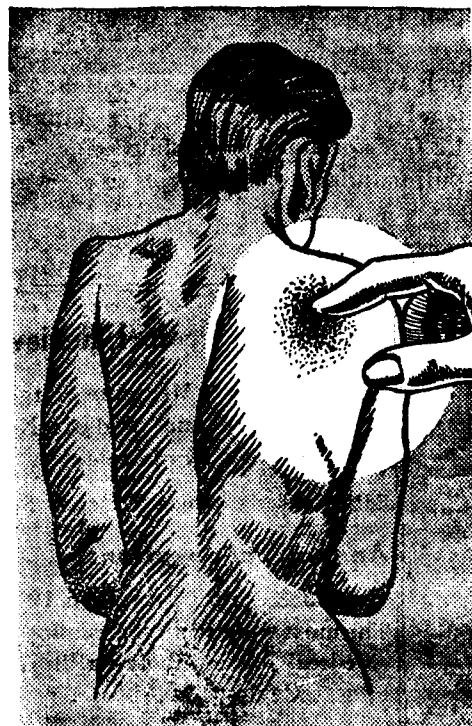
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ICHTHYOSIS.

B. N. BANERJEE, M.B., M.R.C.P. (LOND.)

Ichthyosis is often a congenital condition though it may occur within a few months after birth. It is characterised by a thick, horny epidermis, resembling parchment. The skin looks dry, thickened and scaly, the scales forming a mosaic like pattern, and looks like fish scales. It is sometimes found pigmented. The limbs and the trunk are mainly involved, and the palms of the hands, the soles of the feet, and the flexures escape, and the face is slightly affected. This disease starts in the early months of fetal life, and is due to deficiency of sweat glands. The skin shows an abnormal condition, there may be excessive proliferation in the layers of the epidermis.

Symptoms:—If the symptoms become grave, the child lives a few days, or a week. The opening of the nostril and ear may be occluded by the excessive production of epithelial cells. In the eyes ectropion results and the deformity may result in other orifices, owing to contraction of the skin. The nails and hairs are imperfectly developed. The skin cracks or splits.

This disease is often found in children in mild forms. The symptoms are more prominent during the winter months. Sometimes owing to continued exfoliation of the epidermis, irregular patches are seen. On removal of the hard irregular patches, the skin beneath appears red and moist, which gradually becomes dry, hard and shining and slowly contracting until it splits in various directions.

The prognosis is always grave. The death takes place if the case is serious. If the case is of milder type, life may be prolonged indefinitely.

Treatment:—Treatment may be adopted to keep the part moist and soft. Regular bath with soap and use of glycerine and water after bath should be continued. For improvement of the health, administration of Cod Liver Oil with iron is often helpful. Thyroid gland has been recommended by many authorities.

MILIARIA.

Miliaria often happens due to the obstruction of the ducts of the sweat glands, which is found in the following varieties:—

- (1) Miliaria Sudamina.
- (2) Miliaria Rubra.
- (3) Miliaria Papulosa.



(1) *Sudamina*:—The Miliaria Sudamina occurs owing to proliferation of epithelial cells. The perspirations being unable to escape, accumulate in the form of tiny vesicles. These are found like pearly bodies and by absorption of the cells the disease disappears. Fresh crops are sometimes seen to appear. Sudamina may be found in any of the continued fevers or exhausting diseases. No treatment is necessary.

Miliaria Rubra:—This condition is often found amongst the young children who use clothing all along the hot months. It often appears in the cheek, neck, and sometimes at the side of the face, upon which the infant is used to sleep. The eruption comprises some red papules, sometimes with tiny vesicles. Miliaria Rubra is often due to inflammation of the sweat glands. Usually no itching is complained.

Treatment:—The cause of the disease should be attended properly and use of the Powder, Boric Acid and Starch or Talcum often serve good result.

Miliaria Papulosa:—Miliaria Papulosa is a most common and important variety. It occurs due to some inflammatory products, which are very closely set, the summits of these rashes often surmounted by tiny vesicles, and in severe cases some postules appear. It may be dried up by a slight desquamation without rupturing of the vesicles, if not scratched. In case of scratching, eczema is often resulted.

It often spreads all over the body particularly upon the cheek, neck, forehead and chest. An intolerant, itching and stinging sensation is felt. Profuse perspiration is found on the other parts of the body. This disease often occurs during hot weather and due to use of excessive clothing. Duration, of this disease is often extended from three to four days. It is very troublesome if repeatedly scratched.

Diagnosis of this disease is very easy but presence of sweating on the other parts of the body by the transitory character of the eruptions and the rash never occurs in circumscribed patches.

Treatment:—Prickly heat is to be prevented by light clothing, frequent bathing and use of good toilet powder. Light clothing should be used to protect the scratch. In case there is intolerable itching calaminæ and zinc lotion or dilute lotion of the acetate of the lead, and 1 per cent. formalin or Carbolic acid may be used with beneficial result.

SEBORRHEA.

Seborrhea is due to the functional disorder of the sebaceous glands and although Unna regards all such cases as of parasaitic origin and classes them as seborrhic eczema. This disease may occur in many parts of the body and in all ages. In the young infants it occurs on the scalp.

The seborrhea of the scalp in infants is characterised by the formation of dirty yellow crusts, which are soft, greasy and friable. It consists of epithelial cells, fat globules, and granular masses to which always added dirt. If neglected a thick crust like pasteboard may be formed. On removal of the crust, the underlying scalp is seen quite healthy. More frequently, it is seen eczematous. If the crust is not removed, decomposition of the exudation may take place and it may result in an eczema. Sometimes recovery takes place spontaneously, but generally it lasts for months.

Treatment:—The crust should be softened with oil and should be removed by warm water and soap. Afterwards an ointment of 2 per cent. Resorcin and 10 per cent. Sulphur and 10 per cent. Boric acid should be applied.

ECZEMA IN INFANCY.

Eczema is a catarrhal inflammation of the skin of non-infective organ. Boys are more affected than girls. Children of fair skin, blue eyed, and of weight above average, are more subjected to this disease. The appearance of fatness is owing to watery distension of the tissue. If diarrhoea is present, loss of fluid results with watery motions. Due to oedema children often show anæmic though without any change of constitution of blood. The instability to this water balance is known as "Hydrolabile." Eczematous children often develop a catarrhal condition of the lungs and intestine. This condition may be as a diathesis.

Symptoms:—It is very rare that the eczema appears to an infant before the third month. The onset of this disease is generally seen when diet of the infant has been changed from breast milk to cow's milk. Sometimes children are attacked with eczema when the cow's milk is augmented with other foods such as cereals and eggs.

The rashes are generally seen on the forehead and cheek. In the beginning skin becomes red, hot and dry or may be thickened by oedema. A group of small vesicles later on appears and causes intense itching for which the infants begin to scratch until a thin serum exudes or the skin cracks in various fissures. The serum is dried and forms a yellow crust, and on the hairy scalp they may so coalesce that the head seems caked with them. Under the crust, the skin looks bright red raw, and moist.

The distribution is either patchy or diffuse. In the beginning it is seen on the forehead which gradually extended on the face and scalp, later on the eczematous rash appears on the trunk. Skin in the flexures and the nape of the neck are very common sites of these eczema. In case of older children the rash generally appears on the chin and in flexures of the limb. Sometimes a secondary infection takes place. Owing to scratching dermatitis may result. Long fissures behind the ears, may give trouble for months.

Etiology :—There are two main views before us :—

- (a) Some authorities think that the irritation is due to various external factors.
- (b) The sensitiveness of the skin is due to various internal factors.

Type :—Eczema is generally found in two main types :—

- (1) Dry or Scaly type.
- (2) Weeping type.

Sometimes the dry type may weep or the weeping variety may with care recede to the dry type and then clear up. It is generally aggravated by the warm weather or by overclothing the infants.

Prognosis :—Sometimes rashes clear within a few weeks but the same cannot be achieved unless therapeutic measures are adopted. In default, it will break out fresh after some months. Sometimes suppression of eczema with strong antiseptic drugs leads the children to be affected by asthma or pulmonary tuberculosis.

Catarrhal symptoms as diarrhoea is rarely fatal. But when the temperature gradually rises along with diarrhoea, the case may end fatally. Many cases are recorded in which after the vaccination, eczematous rashes complicated with high temperature and diarrhoea, caused death.

Among other complications septic dermatitis are not uncommon. Sometimes with the sudden disappearance of eczema, ascites and oedema of the legs are noticed. On adoption of a careful therapeutic measure for eczema, ascites and oedema subside.

Treatment :—In order to prevent scratching and irritation of the affected parts, the arms should be encased in cardboard splints, and if necessary a loop of bandage should be pinned to sleeve, fastening the arms away from the sides to the cot or perambulator.

Local Application.—In case the eczema is of the dry type, the lesions should be kept dry by using calamine lotion and an ointment comprising the following should be used.

Re : Resorcin—10 grains, Hydrous wool fat—2 drachms, Soft paraffin to—1 ounce ;

Or

Crude coal tar—15 grains, Starch in powder—108 grains, Zinc oxide—108 grains, Soft paraffin to—1 ounce ;

Or

Calamine—48 grains, Zinc Oxide—48 grains, Oil of cade—30 grains, Benzoated suet or Benzoate lard (aa) to 1 ounce, Oil of geranium—5 minims.

In case there is crust or scab nothing is so useful as starch poultices a tablespoonful of starch should be made to a paste with cold water, and to this sufficient boiling water should be added to dilute the whole to a thin jelly. This should be spread on lint, covered with butter muslin and applied with the muslin next the

affected part, the whole being covered with a thick layer of cotton-wool and bandaged. These poultices may require to be applied on a mask, holes being cut for the eyes, nose and the mouth.

Diet :—Some authorities reported that by the replacement of milk diet instead of mixed diet, the lesion of eczema clears up. The author has got much satisfactory improvement in many cases by adopting fresh cows milk diet. The milk should be boiled for five minutes and the skim should be removed from the top of the milk. This comprises lactalbumin. Half of a drop of Hydrochloric acid (B.P.) per ounce should be added before using the milk. The milk should be used before curdling. In case of breast-fed infants this quantity should be reduced or food such as Benger's food made with skimmed milk, should be substituted for some of the breast milk, to prevent gross overfeeding.

In the beginning, if proper attention be paid for treatment it can easily be controlled. But when the disease becomes general the problem is a difficult one. Proper dressing should be applied in all cases.

Medical Treatment :—

If the child becomes restless, chloral hydrate and Pot. bromide may suitably be used.

The following directions are laid down for mother or attendant.

(1) The child should be kept as cool as possible otherwise all the troubles will be aggravated.

(2) Silk or fine cotton material should be used to protect the lesion

(3) If the eczema is dry let it remain dry. If the lesions are broken or weeping, apply the ointment and bandage as far as possible in order to prevent scratching.

(4) Prevent scratching by such measures, as pasteboard splints.

(5) Soap should not be used in the bath. Toilet oat-meal is preferable.

(6) Milk should be boiled for five minutes and skim should be removed from the top. Orange juice or tomato juice 2 or 3 tablespoonful should be diluted with water and after sweetening with sugar should be given.

Drugs should be used for regular action of the bowels.

PSORIASIS.

The disease is often met in children at the age of 5 or 6. It is characterised by small, round patches of dull-red colour covered with silvery scales.

It is commonly seen on the knee, trunks and elbows, the sizes of the patches is varying from a half pice to a half rupee size. The silvery appearance helps the diagnosis of this disease.

Some authorities describe that this disease possesses a hereditary influence.

Treatment :—The following ointment should be rubbed day and night for four times :—

Re :

Liquor picis carbouis	3i.
Hydrag ammon	Gr. 10.
Paraffinum molle ad	3i.

An ointment such as ung. oleum cadini (B.P.) is also useful. Administration of arsenic often expedites the disappearance of the lesion.

PITYRIASIS ROSEA.

The pityriasis Rosea is another variety of eruption in which scaling is present, and which is quite different from psoriasis or ichthyosis. The eruption generally starts as a solitary pink scaly patch on the neck, chest, abdomen, or limbs, and after some days smaller patches appear all over the trunk. The size of lesion is varying from the size of finger nail or to a larger one. This eruption often lasts for six weeks and gradually fades. Sometimes fever is associated with it.

Diagnosis :—The disease can be recognised by the fact that the herald patch recedes the general eruption by a week, or ten days. It may be differentiated from ringworm by an examination of the scales for the fungus.

Treatment :—An ointment comprising 15 grains of salicylic acid to 1 ounce of lard may produce beneficial result.

URTICARIA.

Children are sometimes affected with this disease. Between the ages of six months to ten years this disease may be met with.

It generally occurs during the spring and summer months.

This disease is characterised by an urticarial wheal with a small red papule in the middle. The wheal fades after a few hours, by which time the papule has become vesicular and owing to thick covering of epidermis, it has a hard shotty feel. The spots are varying in number from 10 to 100 and may occur on any part of the skin, but commonest site of the disease is buttock and lower part of the trunk. On the sole of the feet and palm of the hands where the skin is thicker, the vesicles may be $\frac{1}{2}$ inch across, and are filled with a yellow opalescent fluid.

The eruptions are commonly found when the child becomes warm in bed. Often scratching of the eruption gives some relief. When the vesicles are ruptured, they heal without a scar.

Sometimes the transitory brown pigmentation indicates the site of recent lesions. Secondary infection may take place after scratching.

Etiology :—In the etiological survey there is some evidence of digestive disorder, constipation may be present and the stool may be unhealthy and contain undigested food particles and mucus. These

facts suggest that the toxins are absorbed through the bowels. Many authorities reported that excess of cereals in diet is often reasonable. Bray has pointed out that bacon fat including ham, lard, and bread fried in bacon fat may be a cause.

Diagnosis :—It is sometimes mistaken with chicken pox. The eruptions are small, shotty, hard, while blisters, which when scratched contain clear fluid and followed by raised inflamed or red area. The vesicles of varicella are, however, more delicate and thin-walled, they may be present inside the mouth, and history of contact with another case may be obtained. Scabies always associated with scratching.

Prognosis :—Under proper treatment, it quickly disappears but its prevention is difficult.

Treatment :—A careful investigation should be made for prevention of overfeeding of more than three meals a day. When the weather becomes hot, hot food should be suspended, and groats, cream, butter, eggs and milk should be limited. Batabi is a good substitute for oranges, as they are less acid. Shell-fish, raw meat-juice, ducks' eggs should be avoided. One heaped teaspoonful of bicarbonate of soda should be given in a whole day, a pinch with every drink. The bowels should be kept open by using grey powder and milk of magnesia in the following morning. The spots should be dabbed with calamine lotion to allay the irritation. The following prescription will be found to produce beneficial result. Re: Dilute Hydrochloric acid—10 mms. Syrup—30 mms. Water to—1 drachms. One drachm in a little orange juice three times daily with meals.

NAPKIN RASH.

Napkin rash occurs sometimes as a manifestation of syphilis, otherwise it is due to some local irritation from acid stools or from alkaline urine from lack of carefulness for cleaning napkin. These rashes are mostly due to acid stools excessive administration of carbohydrate diet. Fatty acid stools have been detected in many cases.

A strong smell of ammonia is present. The ammoniacal napkin irritates the skin and produces erythema. The ammonia is liberated in the napkin by the action of urea splitting organisms from the unhealthy stool, which break down the urea of the urine into ammonia and carbon dioxide.

In the beginning the rash appears as a simple reddening of the skin, and if it remains untreated, superficial blisters are formed and rupture to leave extensive and often deep excoriations. The stool and urine passing over these raw areas cause pain and the child is much screaming and restless. The rashes appear at the convexity of the buttocks, the inner aspect of the thighs, the vulva, and the tip of the penis. In case the child repeatedly draws up his legs against the napkin, the skin over the calves may also be involved.

Diagnosis:—Jacquet's erythema should be distinguished from Congenital syphilis. Syphilitic rash extends right to the anal margin, and may spread beyond the area of the napkin and is of a deeper red colour. Other syphilitic manifestations such as rash on the hands or feet, issues round the mouth, shuffles an enlarged liver and spleen, or epiphysitis.

Treatment:—Institutions of habit to pass stool in particular place as soon as the child called by nature should reduce the liability to this infection. A careful attention must be paid to change the napkin as soon as they become soiled, the parts must be washed by warm water and carefully dried and powdered.

In case any sore occurs a thin muslin should be used soaked with mild antiseptic lotion under the napkin. If the skin is reddened it should be rinsed with a solution of perchloride of mercury (1 in 4,000) or boracic acid (1 in 100) after it has been washed, in view to render the napkin aseptic and thus to prevent the growth of urea splitting organisms. With every change of napkin, the part should be covered with vaseline. When the skin becomes sore, an ointment comprising Re: equal parts of Zinc oxide to castor oil or Resorcin—10 gr. vaseline—1 drachm should be used.

Careful attention must be paid to correct the dietetic error.

ENEMA RASH.

After use of an enema, sometimes within 12 hours a bright red eruption appears on the knee, elbow, buttock, face and chin. This is not due to the use of fluid but absorption of toxin from the stool.

It may be blotchy erythema or scarlatiniform. No constitutional disturbance, such as, fever is found, but there is a slight itching. It requires no treatment.

SWEAT RASH.

This is seen in children during hot months sometimes with fever when much sweating is associated. Wearings of woollen or flannel garments often found to be the cause of this condition.

Symptoms:—Rashes commonly appear on the trunk and are of erythematous character, which consist of minute yellow sudaminac, rarely as large as a pin's head on an erythematous base.

Treatment:—In the above circumstances, light cotton dress be used. The parts should be washed with hot water and afterwards a powder comprising equal part of zinc oxide, Boracic and starch be used.

SERUM SICKNESS.

A class of rash often follows after use of antidiphtheritic, antistreptococcal, antitetanic or otiomsera. Generally this rash appears after ten days of the injection though sometimes earlier. This rash is always urticarial which may be blotchy and erythematous, resembling measles. Characteristic symptoms are tenderness in the joints, fever malaise, and occasionally actual vomiting,

which often persists for two or three days or longer. The joint pain accompanied with a rise of temperature, and sometimes continuing for six weeks.

Treatment—Calcium lactate—5 grains, with ephedrine hydrochlor $\frac{1}{4}$ grain twice or thrice daily should be given. Adrenalin 1/1000, 1 to 3 minim should be given subcutaneously. For prevention of the itching of the skin Re: Menthol—1 Drachm, Paraffin album molle, 1 oz. should be used. The use of chloral hydrate in small doses has been suggested by some authorities

DRUG RASH.

Bromide, Belladonna and Phenazon sometime produces rash in infancy.

BROMIDE.

In treatment of epilepsy, a long use of Pot. Bromide often gives rash in infancy.

The eruption consists of small papules or boils which do not scar, and tends to dry off into scabs without leaving a scar. The face is the commonest site of these rashes. The eruption subsides as soon as drug is suspended but this rash may reappear as soon as the salt is repeated. It may be mentioned that some soothing powders contain bromides, and long standing use of such powders may cause this kind of eruptions.

As this salt is excreted through the breast, when the mother takes bromide, the breast fed infant may get the rash.

Iodide rash has a very similar appearance, but it is rarely seen in infants.

BELLADONA.

The belladonna rash appears among the children, the dose which may produce the rash, varies with different constitutions. Sometimes a child cannot tolerate a drachm of tincture in a day, while others tolerate more. These rashes consist of a bright red erythematous flush, like that of scarlet fever, but are less widespread. They are found on the neck and upper part of the trunk. Mental exhilaration, dilatation of the pupils, and a dry mouth are associated with it. Rash often disappears as soon as the administration of the drug is suspended.

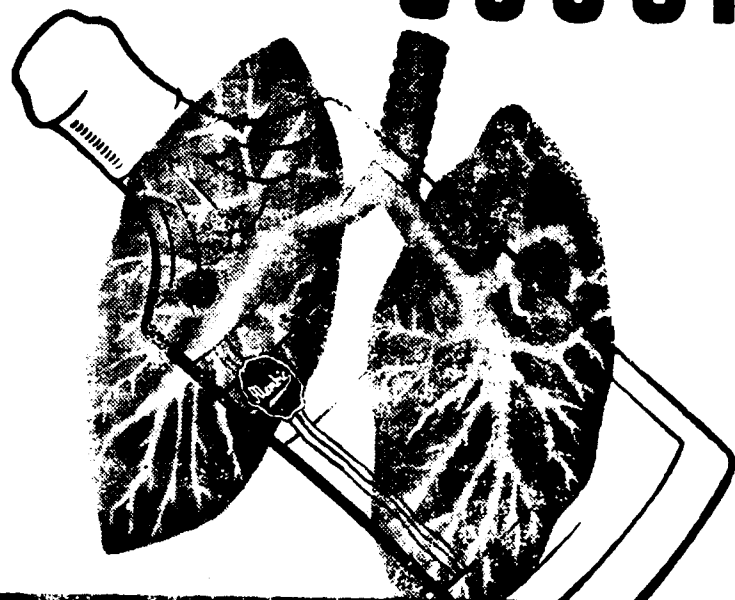
PHENAZONE (ANTIPYRIN).

The use of Phenazone (Antipyrin) often produces a rash of blotchy erythema on the trunk and limbs resembling the rash of measles but the absence of fever, coryza, or Koplik's sopts often helps the diagnosis of this rash.

A similar eruption is often found by use of "Nirvanol" which is used in a case of Chorea.

(Indian Medical Review.)

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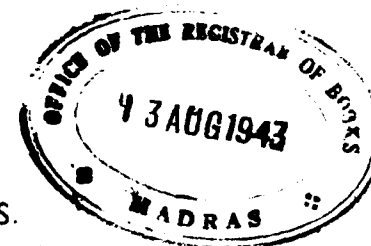
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FUNCTIONAL NERVOUS DISEASES.

N. N. DE, M.B., M.R.C.P. (EDIN.), D.P.M. (LOND.)

INTRODUCTION.

Some peculiarities of functional disorders of nervous system in childhood are often remarkably played. Nervous tissues are rapidly developed in childhood than tissues of the other system, which are witnessed as the steady progress from the helpless infant to the child learning to talk, walk, feed itself and uses his toys according to his own choice, and in such way swiftly expands its functions and in case owing to any reason, if the health of the child is interfered with, functional disorders often take place to overshadow its effects on the remaining part of the body.

In such circumstances, the balance of the nervous system of the young child often becomes in disorder, which may be marked by abnormal behaviours or a sudden fit and this morbid association and unusual habits are commonly acquired. So in order to mould the good habit of the child a skilful training may guard from acquiring other undesirable habits. Of course sometimes the child shows some disorder of behaviours, who are often affected adversely by the excessive anxiety and fussing of the parents.

It is quite possible that the children often acquire habits of peoples surrounding him so the children naturally imitate their behaviours. In case during nursery if any agitation on the nervous system reflects, child often acquires unnatural habit. In such cases, special care should be paid to convey their habit towards good conduct and a strict attention should always be paid to inattention and carelessness and sense of fear.

As regards the senses of fear it should be moderately rectified to the satisfaction of the children. These are comprising of threatening of dire punishment to be meted out by witches, bogies, and suchlike fantasies of the imagination; or even worse, by creating any playing upon a fear of the dark. The implanting of fear often greatly affect health of the child and often disturb his sleep and gives rise to a morbid fear in the day time.

The condition of the nervous system is closely related to the digestive function. Disturbances of sleep, enuresis, morbid habits like dirt-eating, and teething, grinding or attacks of sudden paler due to vasomotor instability, are commonly associated with.

Some children are prone to disorder of nervous functions, which form a group of timidity or fear. These children are often of nervous stock, and the quick speech and restless atmosphere of the patients is reflected to the behaviours of their sons. These children are often physically very wiry, and strong although of spare build;

they are active and inquisitive, bursting with energy, and cram a great deal more than do their brothers and sisters, often acquire a very sensitive and they habit to the atmosphere of their environment. It is natural that these children often with their ceaseless activities, easily decline the store of glycogen; which lowers their metabolic tolerance for fat and renders unnaturally prone to the numerous disturbance of health, accompanied with ketosis. In all cases of functional disorders of nervous system, attention should be paid for metabolic rate made up by limiting their intake of fat and adding sufficient quantity of carbohydrate.

SOME COMMONER INJURIOUS HABITS IN INFANCY AND CHILDHOOD.

SUCKING.

Sucking is a common injurious habit in infancy and childhood. At the first few months of infancy it is very commonly seen in majority of the cases. If the treatment is not adopted at the early stage, the case may prolong for an indefinite period. When the infants are hungry they begin to do this, in such a case every effort should be made to stop it, otherwise it may go on for an indefinite period. Occasionally pulling of the hair and scratching of the body may be accompanied with this habit, which will cause pain, and sometimes may cause the children to cry due to pain. Habit of sucking, if not prevented may continue up to the puberty. If this habit is not checked in early stage it will be very difficult to stop it, and it may run for a longer period.

The habit of sucking often results in the deformities of the thumb, other finger, or the lips and teeth and even of the jaws. Sometimes if this habit continued for a longer period it may stimulate the habit of masturbation. Sometimes spinal curvature has been resulted due to sucking of one hand or finger.

Treatment:—This habit may be controlled mechanically. The hands of young infants may be covered with mittens, or with the long sleeves of a night gown which are pinned to the bed, so that it is impossible for the child to get the part to the mouth; or, still better, cuffs or splints of pasteboard may be applied at the elbow, so as to prevent flexion of the arms. It is well known that the punishment is of a little avail but rewards are often successful.

Nail-Biting and Tongue Sucking.

Nail biting and tongue sucking are often commonly seen amongst the infant and early childhood. Nail biting may be prevented by cutting nail short.

Tongue sucking may be controlled by repeated instruction.

Pica or Perverted Appetite.

In early childhood the habit of eating various substances such as dust, sand, mortar, coal, hair and broken earthen pieces may be seen. These habits are generally found among the children who are

mentally defective. These children are highly neurotic and exhibit some similar habits.

In such cases disorder of digestion is played as an exciting factor. Pica is a common symptom of infection with hook-worm. This habit may prolong if it is not checked. It often resulted in lead poisoning, if pencil is sucked and digestive function may be upset if an injurious substance is eaten which lead to undermine the general health.

In the beginning of this habit a careful watch should be made. An attempt should be made for indulging their abnormal craving. Secondly the digestion should be improved by adequate treatment in individual cases:

Masturbation

Masturbation is not rare in infancy and childhood.

Instances are found at the age of first year and some as early as seventh year or eighth. It is also found in all ages of boys and girls.

Etiology:—Among the local causes undue irritation, long or adherent prepuce, phimosis, balanitis, vulvovaginitis, eczema of the labia threadworms and tight clothing, and excessive acidity in the urine or the presence of crystal of uric are well recognized. Any irritation, as when the part is being rubbed a pleasurable sensation is excited, and which may lead to a habit. Sometimes part is rubbed against floor, wall or pillows or elsewhere which leads to excitement. Habit of sucking of fingers often stimulate masturbation. In early childhood masturbation may be taught by other children or by vicious nurses.

Among the general causes anaemia, generally malnutrition, and a neuropathic constitution or nervous irritability are commonly met. This often becomes usually aggravated by surrounding which tend to unnatural irritation. If it develops from the local cause often mental deficiency is resulted.

Symptoms:—Children are often seen to lie on the floor with the thighs crossed and rigidly held and sway the body backward and forward. And soon after this when the parts become excited the child often seen flush followed by relaxation and often by perspiration.

These children often like to lay down on the bed alone awake or they wake early. These habit often reduce the general health. In some cases general health is not affected but some unnatural signs of disposition to seek seclusion. Other causes are much precocious and excitable with an excessive amount of nervous sensibility, and absent mindedness. Loss of power of concentration, loss of interest in amusements and mental depression, and many symptoms are remarkably noticed.

Instances are also not uncommon to the girls of seven or eight years associated with the habit of masturbation. These girls often loose all sense of modesty or decency and self-control. They become

passionate, excitable, apparently possessed by one uncontrollable desire to practice the habit. But in the interval these children are often found to be quite modest, sweet tempered, and perfectly normal. If prolonged may result this nymphomania, or even insanity. Chorea, epilepsy and hysteria may develop if there is an hereditary influence. Masturbation often affects physical or mental development of the children.

Among local symptoms of masturbation in the male there may be redness and slight swelling of the prepuce; the organs may be abnormally long or simply much relaxed. The frequent erections of penis is often a suspicious symptom of masturbation.

In case of girls abnormal development of genital organ is noticed and hair on the pubis appears at an early age. Adhesion of clitoris is one of the prominent symptom. Sometimes vaginitis may occur.

Prognosis :—Masturbation in the early childhood may easily be detected. But if not checked with adequate care and treatment it may be continued to their life time. In such a case, it cannot be detected under any circumstances, unless the patient himself complained of this condition. In every case if the health of the children breaks down and the abnormal symptoms of nervous systems develop, proper investigation should be made to detect this cause. If this is not treated the condition of the child will gradually become worse. The tendency of relapse is very strong.

Treatment :—The treatment of masturbation comprises a skilful attention of mother. Sympathetic instruction and mechanical restraint and administration of certain drugs. All source of local irritation must receive prompt attention and careful investigation of their sources. A corporal punishment will do a little help, but sympathetic instruction gives satisfactory result. The causes of local irritation should be furnished to the physician for further investigation of the cases. Mechanical restraint is some times helpful in young children. Thigh rubbing may be prevented by the wearing of broad garters high up the thigh with a thick pad on the inner side to prevent the thighs from being brought together, or the thighs may be kept apart in a short bar connecting rings round each thigh.

The thread worms may be cause of the local irritation. Normal saline, with infusion quassia, douche, twice daily is often helpful. If constipation is a cause it should be removed by adequate treatment or petroleum emulsion or by such other means.

In little girls if the vulvitis is present it may give rise to slight local discharge or may be indicated by a reddened or sore perineum and in these case the child should be given warm hip baths twice a day. One of the best solution is potassium permanganate weak solution to the bath to make the water bright pink; or a weak iodine bath may be used, allowing an ounce of tinc. iodine to 2 gallons.

In boys, the prepuce may be tight and adherent, or there may be some balanitis which would be an indication for circumcision, but unless such local condition is present the operation should not be undertaken as it may not be curative, and indeed, by allowing the sensitive glands to be continually exposed, it may cause the habit to become more deeply engrained. Administration of Bromides and Belladonna often gives satisfactory result. Liquid ext. of salix nigra is a valuable sexual sedative, may be used 5 m. per day to a child of one to two years.

Extracts.

THE ROLE OF HORMONES IN SEX DISORDERS IN THE MALE

BY A. P. PILLAY, O.B.C., M.B.B.S.,

Whiteaway Laidlaw Buildings, Bombay.

The sex disorders of the male are, broadly speaking impotence and sterility. Impotence means inability to perform coitus satisfactorily. The act of coitus consists, in sequence of 'libido, erection of the penis, coitus proper, ejaculation and orgasm. Absence or defect in any of these factors, or disturbance in the relative time or sequence of any one of them, constitutes impotence. Few men complain of disorder of orgasm, though occasionally some say that they do not enjoy coitus. This is due to defective libido, to absence of sex attraction of the partner or to lack of adaptation between the male and female copulatory organs (e.g. as in lax vagina). Sex disorders may be due to organic, endocrine or psychic disturbances.

1. *Psychic disturbances* Psychic impotence is more common before the age of 30 or 35 and the endocrine type in later years.

2. *The endocrine factors.* The endocrine glands governing the sexual system in the male are the testes, the anterior pituitary, the adrenals, the thyroid and the thymus. The last two are of little importance. The testicles are the most important. Sperms are produced by the seminiferous tubules of the testes while the hormone is secreted by the interstitial tissue.

The male hormone. The male hormone brings on sexual maturity, the development of the accessory sex organs, and the formation of the male characteristics. It establishes ejaculation, controls erection of the penis, and stimulates the sex centre in the brain. In short, it develops the sex organs and initiates and controls their functions. After the stage of adolescence increase in the size of the penis can not be brought on by any quantity of the hormone

administered, except in cases of sexual infantilism. So in sexual infantilism and hypogonadism, the male hormone is the product to be administered. In psychic cases, the male hormone acts by stimulating the sex centre, increasing the vascularity of the sex and accessory sex organs and the quantity of the secretions of the latter.

Causes of premature ejaculation are hyperaesthesia of the sex organs or prostatic urethra prolonged abstinence and deep rooted psychic causes. The use of male hormone in premature ejaculation is justified only in cases of hyperaesthesia of the posterior urethra and adjacent areas.

In sexual infantilism large doses are required for a prolonged period. In hypogonadal cases small doses give better results and the length of treatment needed will depend on the degree of the hypogonadism.

Large doses of the male hormone administered for a long period have a depressing effect on the sex function in sexually normal men and in cases of impotence not caused by endocrine deficiency. In psychic cases high doses for a short period and later small doses are advisable, otherwise the state of depression sets in and the condition is aggravated. In sexual neurasthenia, a very common condition, small doses of the hormone usually effect a cure because of its soothing effect on the brain and nervous system.

The female hormones. The other hormones found to be therapeutically useful in male sex disorders are the follicular and luteal hormones. Korenchevsky and Dennison (1937) found that the follicular hormone caused increase in the weight of the seminal vesicles, slight increase in the weight of the prostate. In adult male sexual activity may be due in part and possibly wholly to reactivation of the pituitary which is accomplished by the estrogenic substance. The follicular hormone rapidly induces hyperaemia of the sex organs and muscles and increases peristalsis. The secretions of the accessory sex organs are increased and the whole sexual system is sensitized. The result is stronger and more constant erections, increase in the volume of the seminal fluid, constant nocturnal emissions, quick ejaculation during coitus and increased frequency of urination. The semen is often blood stained, increased activity and sensitiveness of the sex organs are seen and these results are of the irritative type. Increased libido is also noticed due to reflex action of the hyper sensitive sexual system on the brain sex centre. So it is useful in absent or defective erections, ejaculation and libido, especially of the paralytic type when caused by psychical factors and sexual excesses. The effect is immediate, and striking. When administered in combination with the hormone, the secretions of the accessory sex organs are further increased, but the symptoms of irritation are not present as the action of the latter is soothing. In sexual infantilism, the combined treatment gives better and more

rapid results. The follicular hormone is contra-indicated in all cases of sexual hyperaesthesia.

It is not advisable to give large doses or prolonged treatment with small doses of follicular hormone to elderly persons because of its possible bad effects on the prostate.

(2) The luteal hormone has just the opposite effect and its administration is indicated in all cases of sexual hyperaesthesia, such as increased libido, premature ejaculation, nocturnal emissions, frequent erections, spermatorrhoea and prostatorrhoea. It has a soothing influence on the nervous system.

Dosage. When immediate results are desired, as in the psychic or paralytic types of impotence, large doses of the follicular hormone alone or combined with the male hormone should be administered. When prolonged treatment is indicated, small doses should be used. Luteal hormone, physiologically antagonistic to follicular hormone, relieves premature ejaculation and so also do small doses of the male hormone, when the disorder is not caused by deep-rooted causes of psychic inhibitions and fixations.

(Abstracted from the Indian Medical Gazette).

BENZYL BENZOATE IN TREATMENT OF SCABIES A COMPARISON OF THE EFFECTS OF AQUEOUS AND SPIRIT EMULSIONS

BY K. C. MELLAN, M. B., Major, R.A.M.C.

At the request of the A.D.M.S. a series of cases of scabies was treated during a three months period to ascertain the value of an aqueous emulsion of benzyl benzoate. During the previous 12 months many cases of scabies had been treated in this camp reception station by various methods, and it was evident that the benzyl benzoate one was the best.

The cases were not selected, every second admission being treated with the aqueous emulsion, regardless of the extent of the lesion present. The control group was treated with the spirit emulsion. The emulsions used contained equal parts of benzyl benzoate, soap, and spirit or water. The number of cases upon which these figures are based was 1,000, and the slight discrepancy in the final figure is due to the fact that benzyl benzoate was at times difficult to obtain. As a result more cases were treated with the spirit emulsion and a few with sodium thiosulphate and hydrochloric acid. The latter treatment was used to a considerable extent in the earlier part of the year, but was discontinued because of the number of cases of dermatitis that resulted.

METHOD.

The number of beds available was 39; but at times room had to be found for more cases, and these were accommodated on stretchers,

There were only two baths to be had, and these were in constant use for the bathing and scrubbing of the patients. During the three months under review the number of baths given averaged 25 per day.

On admission the patient's clothes were checked and sent to the pack store, where the articles, which include the bedding, were disinfected in a hot-air disinfector of the Milibank type. The clothes were then stored away until the patient was ready for discharge. The patient was given a bath and scrubbed by an orderly, and was treated with either type of emulsion. He was then dressed in pyjamas and put to bed. On the following day he received the same treatment. On the third morning he was seen by the medical officer, and if there was no active lesion he was given a treatment of calamine lotion and discharged the next morning. In the cases in which there was a secondary infection, such as impetigo, he was transferred to the main block of the camp reception station for further treatment. These cases with another infection are not included in this series. Some of the cases were not completely cleared by two baths, and these had to have a third application of the treatment; a few had four applications. The numbers, however, were very small: in 28 cases three baths were required, and in 3 cases four baths.

Results. 527 cases were treated with a Benzyl Benzoate Spirit emulsion. Incidence of recurrence, was 1.56 per cent. and of Dermatitis 1.2 per cent. 448 cases were treated with a Benzyl Benzoate aqueous emulsion. Incidence of recurrence, was 0.24 per cent. and of Dermatitis 3.1 per cent. 24 cases were treated with Thiosulphate and Hydrochloric acid. Incidence of recurrences was 4.0 per cent. and of dermatitis 4.0 per cent.

CONCLUSIONS AND SUMMARY.

One thousand cases of scabies were treated, half with an aqueous and half with a spirit emulsion of benzyl benzoate. It would appear from the results that the aqueous is as efficient as the spirit emulsion. The advantages as regard cost are obvious.

The amount of dermatitis is slightly higher and the incidence of recurrence very much lower. There are a few general points worth noting about the cases sent in for treatment. The incidence of penile, abdominal, and thigh lesions is amazingly high—79 per cent.—and the fact that only one case had the lesion confined to the interdigital spaces bears out the theory that most people consider that the disease is due to close body contact. This is also borne out by the fact that the majority of these men gave a history of having returned from leave during the previous 7 or 8 days or admitted recent venereal contact.

(Abstracted from the British Medical Journal.)

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Medical Notes and News.

THE KISTNA DISTRICT BRANCH OF THE INDIAN MEDICAL ASSOCIATION, MASULIPATAM.

Minutes of the monthly meeting of the Kistna District Medical Association, Masulipatam, held on 2-7-43, Friday, at the Government Head Quarter Hospital, Masulipatam.

26 Doctors and 4 Lady Doctors attended the meeting.

Tea was served at 6-30 P. M.

Then the business meeting began with Dr. N.N. Sujeer, President, in the chair.

The President in his opening remarks offered felicitations on behalf of the Association to Dr. Y. S. Chowdary, L.M.P. of Pedakal-lepalli, on his taking up commission in the I.A.M.C.

Then Dr. M. V. Subbarao, Secretary, read the minutes of the last meeting held on 5-6-43, Saturday, at the Government Head Quarter Hospital, Masulipatam, which was unanimously passed.

Read letter No. C. 124 dated 14-6-43 and No. C. 125 & 126 dated 30-6-43 from the Honorary General Secretary, I.M.A., Calcutta, and action is postponed to next meeting.

Then the Medical meeting began at 7-30 P. M. Dr. Y. S. Chowdary read treatment of Sprains by Leriche's method. (2) Dr. Mrs. P. Janaki Bai read an interesting case of Tumour Abdomen. (3) Dr. M. V. Subbarao read 2 interesting cases of Herneia.

Then the President in his concluding remarks discussed the salient points of the above cases, and the meeting concluded with vote of thanks at 8-30 P. M.

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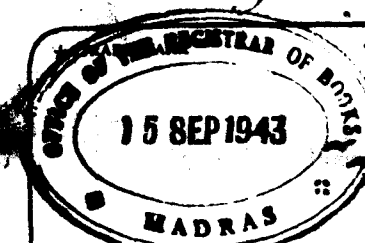
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WAR GASES AND TREATMENT OF GAS CASUALTIES

BY K. N. JEJURICAR, I.C.P.S. (Bom.)

Hony. Anaethetist, Sassoon Hospital, Poona.

With the declaration of the recent statement of the British Premier which was published on 22-4-1943 it appears that chemical warfare will come into-prominence and hence it is absolutely desirable, that people in general and the medical world in particular should be conversant with the anti-gas measures. In India there are very few people who can claim to know much about this subject with an actual experience of gas warfare. The Government has been alert enough to make some arrangements for the A.R.P. personnel and the medicos for their training in Anti-gas measures. The writer had a chance to be deputed for such training to Bombay and the present article is an outcome of the information that could be gathered in the course.

HISTORY.

Even though chemical warfare is supposed to be one of the modern ways of fighting, its history dates as far back as the most ancient times as Puranas when the Aryans are said to have been using the Astras and Mantras. Gas does not mean necessarily Gaseous substance, but any poisonous substance used is called Gas. In ancient times arrows and spear heads were smeared with some poisonous substances, which used to have a deadly effect on the enemy. It was in 400 B.C. that Athenians used poisonous substances against the Spartans. Bellows were used when air was unfavourable. In the war between Crusades and Saracens, gas was said to be used. In the famous 100 years' French war with the British, slate lime was used for eyes. The Americans had also a fancy for this gas and it is stated that Red Indians were fought by Americans with some poisonous gas.

Coming to the present times in the last war, it was on April 22, 1915 that the Gas was used for the first time by the Germans.

Chlorine and mustard gas was used. There were 1,60,000 casualties between July 1917 and November 1918 of which 20 per cent. were fatal.

After the termination of the last war in 1919, in Geneva at a conference of the League of Nations, anti-gas regulations were passed and every nation was prohibited from entering into any chemical warfare. Even then in 1926 in the war between Spaniards vs. the Rittos gas was used. In 1936 Italy used poisonous gas against Abyssinians and in 1937 Japan is said to have used gas against China even though correct evidence is lacking. In the present war, Japanese and Germans are said to have used the gas but authentic proof is not forthcoming. Now it has been declared by Mr. Churchill in his statement on 22-4-1943 at 10, Downing Street that Hitler has threatened Russia that fierce gas will be used against the Russians and that the Germans are making heavy preparations for it. The British Premier had also replied Hitler in the same spirit and has declared that the British are also ready with their preparations if such a state of affairs occurs.

I. WHAT IS A GAS?

The term gas is used to denote any chemical substance whether solid, liquid or gas used for its poisonous or irritant effects on the human body. The gases are used to achieve the following objects:—

- (1) To produce casualties causing discomfort, temporary injury or even death.
- (2) To reduce or even arrest industrial and commercial activities.
- (3) To make food and similar store unfit for use.
- (4) To cause panic in the population and to lower the morale of the civil population.

The gas is released in the following forms:—

- (1) By bombs -high explosive bombs weighing between 250 to 3000 lbs.
- (2) By spray—Gravity method, Pressure method.
- (3) Gas shells thrown around by guns.
- (4) Miscellaneous methods:—Articles of every day use, fancy articles contaminated with gas are used to release the gas. Ordinary kerosene oil tins are many a times used as containers for gas.

2. REQUIREMENTS OF A WAR-GAS.

- (1) It should be casualty producing.
- (2) It must be heavier than air.
- (3) It must be made of cheap material and easily procurable and must be abundantly available.
- (4) Easy and simple to handle even by non-experts.
- (5) Difficult to protect against.

3. CLASSIFICATION: (PHYSIOLOGICAL).

- | | |
|--------------------------|----------------|
| (1) Tear gases. | } Non-blister. |
| (2) Nose irritant gases. | |
| (3) Lung irritant gases. | |
| (4) Blister Gases. | |

Characteristics of non-blister gases.

- (1) *Lacrymators* (Tear Gases).

(a) Chlor-Aceto Phosgene (C.A.P.). Non-persistent; crystalline; varying in colour from colourless to deep-dark colour. The gas is evolved by heating the crystals.

(b) Ethyl-Iodo-Acetate (K.S.K.) Persistent, dark brown oily liquid; smell of "pear drops." It has a high boiling point.

(c) Bromo-Benzyl cyanide (B.B.C.) Persistent. This is yellow oily liquid with a penetrating bitter sweet smell; higher boiling point.

Signs and Symptoms (Tear Gases).

These gases attack the exposed mucous membranes of the eyes, nose, pharynx and the respiratory tract. The effect is immediate but temporary. It produces acute pain, lacrimation spasm of the eyelids and photophobia. This may result in serious interference with vision and even complete inability to see.

(3) *Treatment*:—The symptoms quickly disappear and hence very little treatment is required. Removal of the person from gas-charged atmosphere is always followed by rapid recovery.

Complications:—Conjunctivitis, Bronchitis.

NASAL IRRITANTS.

- (1) Di-phenyl-chlor-arsine (D.A.)
- (2) Di-phenyl-amine-chlor-arsine (D.M.)
- (3) Di-phenyl-cyano-arsine (D.C.).

These are all solid arsenical compounds which can be dispersed by heat in the form of a very fine "parlienate" cloud or smoke which consists of minute solid particles in suspension.

Signs and Symptoms:—There is acute pain in nose and the paranasal sinuses followed by heaviness of head and headache. There is a fit of repeated sneezing accompanied by burning sensation in throat and tightness in chest. There is grittiness in eyes, with lacrimation. The gums become painful and there is always a sensation of nasal vomiting. There is a great mental depression which is a characteristic of this gas. The irritant effects disappear within one hour.

LUNG IRRITANT GASES (ASPHYXIANTS).

- (1) Chlorine—Non-persistent. In high concentration it is seen as a greenish yellow cloud. It has a marked smell of bleaching

powder. This was the first gas that was used by the Germans in the Great War.

Phosgene:—Non-persistent; the most poisonous, colourless. It is a liquid which boils at a low temperature about 47° F. Smells of a musty hay.

Chloropicrin:—Persistent. This is a yellow liquid boiling at the same temperature as water; smells like chlorine.

Di-phosgene:—Persistent; This is an oily liquid, smelling like phosgene, with a boiling point slightly higher than that of chloropicrin.

(7) *Treatment*:—Remove the contaminated clothes immediately. Ordinary respirator is no good. Complete rest for a short time is often sufficient. A few whiffs of chloroform will help to relieve the pain immediately. Give a nasal douche and wash the eyes with 5 per cent. sodium bicarb soln. in warm water and gargle with the same solution. Vomiting will be stopped with copious draughts of the same solution.

Acute symptoms:—There is immediate catching of breath, followed by cough and a sensation of constriction and pain in chest. There is gasping respiration, interrupted by fits of violent coughing, retching and vomiting. There is internal headache and a profound sense of fatigue is always present. Any attempt to take a long breath causes much discomfort and coughing. Paroxysmal cough and vomiting are the marked symptoms of chlorine and chloropicrin poisoning followed by panting and cyanosis. Circulatory collapse with feeble pulse and cold skin is more common in phosgene.

Physical signs:—Resonance over the chest inspite of pulmonary oedema. Breath sounds deficient at back. The seriousness of the case is guided by the colour of the face, pulse, and respiration.

(9) *Treatment*:—Rest is the most important thing and hence all cases should be treated as stretcher cases.

Venesection:—If cyanosis is present do venesection and withdraw about 300 to 600 c.c. of blood.

Venesection may be followed by injection of saline.

Oxygen:—Oxygen should be given continuously for 25 minutes with an intermission of minutes every $\frac{1}{2}$ hour till colour changes to pink. 3 to 10 litres of oxygen should be given per minute.

Transfusion of plasma or 10 percent. glucose is very helpful. Atropine is useless and morphia is harmful. Ammo. carb. and Ipecacuanha is indicated only in mild cases. No expectorant should be given in severe cases.

After effects:—Broncho-pneumonia, muscular weakness, tachycardia, nocturnal asthma.

Prognosis:—"Blue" type reacts, well to treatment. Grey type is bad. If the patient lives till the III week prognosis is good. In 80 percent cases death occurs within 24 hours.

5 CHARACTERISTICS OF BLISTER CASES.

Mustard Gas:—Persistent. It is used in crude form. It is dark heavy oily liquid; it has a garlic odour. The boiling point is high (423°F). It is about $\frac{1}{3}$ times as heavy as water and does not mix with it and naturally sinks to the bottom of still water. Slightly soluble in cold water and is soluble in animal oil and fats and that is why it easily penetrates the skin. It is soluble in petrol, alcohol and many other organic solvents. It has got delayed action on the body of the person and is dangerous either in vapour or liquid form, and has got cumulative action. The reaction is entirely local and there are no general poisoning results.

B. *Levisite*:—Not yet been used in war. It is used in crude form, it is a dark heavy oily liquid and possesses a strong odour of geraneums. The boiling point is 374° F. It is completely insoluble in water. It is soluble in organic solvents and oils and fats and possesses the property of rapid penetration of skin.

The main feature of the symptoms of this gas is their insidious onset.

Eyes:—Smarting—lacrimation—pain in the eyes, followed by swelling and echymosis. There is occasional ulceration and in severe cases keratitis and septic ulceration is the main feature. Mild cases become fit for work in 2 weeks. Others may take 2 to 6 weeks. But in severe cases where corneal changes are manifest recovery is possible in 2 to 4 months. There is a very small proportion of cases where there is total loss of sight.

Respiratory:—Rhinites with sneezing and profuse watery secretion which soon becomes mucopurulent. Laryngitis followed by hoarseness of voice and aphonia. There is cough and occasional bronchitis with fever.

Skin:—The degree of burn is more severe in areas which are subjected to a constant friction such as neck, wrist and ankles. On the bare surface the result is more rapid due to direct attack. Erythematic flush followed by pigmentation appears in 2 to 48 hours. The affected part is soon full of vesicles which coalesce and form a blister full of clear yellow serum. Vesication is complete by second day but blisters are seen appearing in crops for days following exposure. There is constant itching and disturbance of sleep in cases where burns are extensive. In severe cases there is oedema of skin followed by blisters. The result is that there is sepsis and then healing is very slow. All types of mustard gas burns heal slowly. The healing stage is characterised by a coppery pigmentation of the epithelium.

Alimentary Tract:—Due to ingestion of infected saliva there is nausea and vomiting followed by epigastric pain. This usually disappears in 2 days.

Urinary System:—There is albumin in urine and in cases of sepsis hæmorrhagic nephritis.

There are toxicæmic symptoms in septic cases.

Treatment:

Eyes:—Wash the eyes with 2 percent. boric lotion, or normal saline. Atropine ointment (1 per cent.) every 12 hours for pain and spasm. In case of mucopurulent discharge, 2 per cent. argyrol. Cocaine is contra-indicated. No bandaging. Liquid parafin should be dropped in such cases. Shades should be given to the eyes.

Blister:—Open then and dress them with crude cod liver oil. When the blisters are extensive Dettol 20 per cent. mixed to a prepared 5 per cent. Tanic acid solution; coagulum forms quickly with this preparation. When the coagulum is separated use stimulating ointment.

General Treatment:—Give fluids freely. Vitamin C is also indicated.

Preventive treatment:—A bland ointment or paste is used for rubbing into the exposed part to prevent burns. Decontamination by solvents such as petrol, kerosene etc. and thorough washing with soap.

(8) GAS AND METEOROLOGY.

The behaviour of gas is influenced by the meteorological conditions present in the area affected. A strong wind is always favourable for safety as it rapidly dilutes and disperses the non-persistent gases and clears the area of the persistent gases. The persistency of the latter is more marked in the case of wind with low velocity and sultry weather. Temperature also plays an important part. Warm sunny weather is unfavourable to the most effective use of gas. In India the persistence of gas will be much less than in western countries. The gas will be destroyed and evaporated in no time and there will be no need for extra decontamination. War gases in India will not be of any use, on account of the weather condition and the large amount of open space. In India the total built up area is only 1/10th of the whole area.

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AIR EMBOLISM AS A COMPLICATION OF ARTIFICIAL PNEUMOTHORAX

BY M. A. HAI, M. D., M. R. C. P. (EDIN.), T. D. D. (WALES)
Lecturer in Pharmacology, Prince of Wales Medical College, Patna.

INTRODUCTION.

LITERATURE:—Air embolism is one of the serious accidents that may occur during the induction of artificial pneumothorax. The risk of the needle puncturing the lung and entering its blood vessels is evidently greatest during a primary induction when the lung is in close contact with the chest wall. Indeed, Saugman (1914) introduced the manometer to the artificial pneumothorax apparatus, air embolism following induction of A. P. was not at all uncommon. Before the introduction of the manometer the position of the needle point inside the chest cavity could not be ascertained, as now, by noting pressure changes in the manometer. During refills when the lung has collapsed away from the chest wall there is ordinarily little risk of puncturing the lung and the only danger of air embolism is from the needle entering and tearing an adhesion. Maendl (1927) records a case of this sort, at autopsy a blood vessel was found still open in an adhesion which had been invisible in the skiagrams. The air which was sucked into the vein in this case was derived from the pneumothorax cavity, and it entered the circulation intermittently with variations in intrapleural pressures, giving intermittent symptoms. Veins, the wall of which are stiffened by surrounding infiltration do not collapse promptly when wounded, and the opening is not as apt to close as the opening in healthy veins in experimental animals and it remains a source of danger. If the needle should penetrate an adherent lung the movement of the lung with respiration across the needle point might cause the needle to open a venous channel to the air from an alveolus or bronchiole. The negative venous pressure existing in the pulmonary veins will suck this air into the veins, thence to the left heart, the coronary, the cranial or other arteries. Air embolism may thus result without any air being injected from outside. The needle may directly enter a pulmonary vein and air may be sucked from the pneumothorax apparatus due to the subatmospheric pressure in the pulmonary veins. The production of an air pocket under pressure may tear a recent adhesion and allow the injected air to enter the circulation. A sudden increase in intrapleural pressure during sneezing or coughing can cause a tear in the visceral pleura near the hilum at its junction with the parietal pleura and thereby produce mediastinal emphysema and air embolism. This has been demonstrated by Jounnides and Tsoulos (1930) experimentally on dogs. This explains the possibility of air embolism without injury to the pulmonary tissue by the pneumothorax needle. With proper technical skill, and making the correct and the fullest use of the manometer the risk of air embolism is almost negligible but there may be instances similar to those discussed above where air

embolism occurs as a matter of pure accident. The cases that one chances to come across are likely to fall into this category. It is fortunate that in many of the cases in which the lung gets punctured the needle point rests in an alveolus or bronchiole without having wounded a pulmonary vein and any air that may be injected is simply passed out through the bronchi and the trachea. Air may also be injected in small quantities into the veins of the systemic circulation without causing air embolism for the air is filtered as the blood passes through the lungs before it reaches the coronary or cranial arteries.

In fact, incidence of air embolism following induction of pneumothorax does not exceed 1 in 500 to 1 in 1,000; Stivelman (1919) found none in a series of 867 cases and Burrell (1932) within a period of 7 years, with 10,141 pleural punctures recorded only two cases of mild gas embolism. Chand and Wig (1940) state that air embolism is a very rare but a very serious complication of artificial pneumothorax. They had come across only one case at their centre in four years during which period some thousands of A. P. fills including some hundred of primary fills were given.

SYMPTOMS:—The symptoms of air embolism vary with the location of the embolus, and it must be remembered that there may be multiple emboli to many different parts. The air floats on top of the blood stream and most of the reported cases have been to the cerebral circulation, giving localized convulsions, blindness and paralyses. The symptoms may pass off in a few hours or weeks. Durant (1935) has given an excellent description of a case of coronary air embolism in which he had electrocardiographic evidence of coronary embolism three hours after the accident. The patient happened to have had previous electrocardiographic tracings which were available for comparison with the subsequent ones. It required at least two months for the electrocardiographic abnormality to disappear. In this patient the diagnosis of air embolism could not have been made from the bizarre symptoms; both hysteria and pleural shock had been diagnosed before the electrocardiogram proved the coronary embolism. The points which Durant emphasized were the ease with which air enters the coronary circulation, the difficulty of making a clinical diagnosis, and the similarity of the attack to those reported as due to pleural shock.

The diagnosis of air embolism with its multiplicity of symptoms is often a difficult matter. When foundation for the diagnosis is lacking pleural shock is often assumed. Burrell and many authors recognised the difficulty of distinguishing gas embolism from pleural shock. Brauer and his school actually believed all cases of pleural shock to be due to air emboli and tried to corroborate their views by animal experiments and by demonstrating air emboli in retinal vessels in clinical cases of pleural shock. Localizing nervous

symptoms such as blindness and convulsions may make the diagnosis obvious. Air has been seen in the retinal vessels with the ophthalmoscope, and air in skin capillaries may produce a "marbled" effect. Air churning in the right ventricle may be auscultated as a "swishing" or "thrashing" sound, or "mill-wheel murmur", but this is produced by air that has entered a systemic vein rather than a pulmonary vein.

PROGNOSIS:—Death from air embolism is rare but if it does occur it is usually quick. Hamilton and Rothstein (1935) state that recovery is the rule if the patient survives for quarter of an hour.

TREATMENT. The treatment of air embolism is largely a matter of prevention. Once an embolus has reached the peripheral circulation little can be done. As the air tends to reach the higher parts of the body the head should be lowered immediately if any symptoms appear. Cardiac stimulants may help to maintain the circulation.

SUMMARY AND CONCLUSIONS.

1. Occurrence of air embolism in connection with the induction of artificial pneumothorax is discussed.
2. With modern technique this accident is a rare phenomenon. The few cases that are met with these days are instances of the so called unavoidable accidents.
3. A case of air embolism occurring during the 23rd refill has been reported.
4. A possible explanation as to how the accident occurred has been attempted.

(Patna J. Medicine, 1943.)

THE SCOPE OF ARTIFICIAL IMPREGNATION IN THE BARREN MARRIAGE.

S. LEON ISRAEL, A.B., M.D., F.A.C.S.

The involuntary barren marriage continues, as it has for ages to present an important medical, economic, and psychologic problem. The oft-quoted statement that from 10 per cent. to 15 per cent. of marriages in the United States are involuntarily barren, while coldly accurate, does not sufficiently express the appalling degree of marital insecurity and the deep unhappiness which lie submerged in the statistics. It is, therefore, the duty of any physician consulted by a barren couple to appreciate the complexity of the situation and to bend his every effort to the solution of the difficulty. From the standpoint of the required systematic survey, it is essential that both partners be assiduously investigated for possible etiologic factor and that any possible impediment, however slight, be removed. The

methods of making an organized search in each marital partner and the means of treatment, having been clearly described in recent years, are not within the province of the present essay.

This presentation is concerned with the relatively small group of childless couples who, having been thoroughly studied and, perhaps, treated, find themselves in the unhappy estate of unilateral barrenness—a dilemma in which the female is theoretically fertile and the male alone is absolutely sterile. Is it the privilege of such unblest women, lucklessly mated to sterile husbands to achieve maternity artificially? The moral and legal aspects of this question are, for the present, difficult to crystallize, but from the physiologic viewpoint the response is unequivocally affirmative. It must nevertheless, be admitted that it is well-nigh impossible to apply the medical answer without due consideration to the two imponderable components of the question.

If an absolutely irremediable barrier to fertilization is found in the husband and if the wife, after complete study is potentially fertile, it is then incumbent upon the physician to explain the hapless predicament to the barren couple. The physician should not attempt to sway the judgment of the couple but should merely discuss with them the need of adjusting their material philosophy to that of a childless union, or, if they so please, the advisability of adopting one or more children. Occasionally, it will be suggested by one of the partners that the wife submit to artificial impregnation or, as the lay magazines state, "have a test-tube baby." The physician need assume no particular responsibility if one of the first two courses is chosen, but his burden is, indeed, heavy should the couple elect the last mentioned procedure.

The occurrence of normal pregnancy following the artificial transfer of semen to the reproduction tract of the female is not a newly discovered phenomenon. The fourteenth-century legend of the warring Arabian tribesmen who, in the dead of night, successfully inseminated the well-bred mares of their enemies with semen obtained from inferior stallions is often related as the origin of the procedure. The first successful experimental fecundations were those of Jacobi who, in 1700, was able to fertilize artificially the eggs of fish. Nearly a century later, the Abbe Spallanzani succeeded in artificially impregnating a spaniel bitch. The first successful artificial impregnation in a human female is credited by Home to John Hunter who allegedly related the occurrence of such a pregnancy following the transfer to the vagina of semen from a husband with hypospadias. In the United States, Marion Sims was the first to employ this modality in sterility. In 1866, Sims reported that 1 of 6 intrauterine inseminations had been successful. Since that time, as reviewed recently by Cary, many gynecologists have recorded their experiences with artificial impregnation. The procedure

is currently in the limelight because of the keener interests in barren marriages and because, as knowledge concerning the menstrual cycle and ovulation accumulates, such inseminations are more often successful. The recent questionnaire survey of 30,000 physicians, conducted by the National Research Foundation for Eugenic Alleviation of Sterility, shows that at least 9000 live children were produced by artificial impregnation in this country up to June, 1940.

Indications for Artificial Impregnation: The indications for artificial impregnation in instances of sterility though limited and well defined, vary with the type of insemination to be employed. The procedure may be either *homologous*, when the husband's semen is artificially transferred to his wife's reproductive tract, or *heterologous* when the semen of a stranger is employed.

Homologous insemination is indicated in the presence of either penile or vaginal malformations which prevent the normal deposition of semen in a couple otherwise potentially fertile. Thus, either hypospadias or pronounced vaginal atresia may constitute an indication for homologous insemination. A persistently acid reaction of the cervical mucus, as described by Guttmacher and Shettles may be considered an indication for homologous insemination of the intrauterine type. The producer is, however, of no value in the management of ordinary sterility wherein one attempts, as Guttmacher states, "to give the spermatozoa a 3-inch boost on their 6-inch journey".

Heterologous insemination, utilizing the semen of a donor, is indicated when it has been positively determined that the husband is absolutely sterile, as in either total aspermia or irreparable azoospermia, and that the wife is potentially fertile. The latter statement implies definite knowledge that the Fallopian tubes of the wife are normally potent, that there is no cervical infection and that the uterus is not underdeveloped. It is obviously important that the wife be free from any constitutional or local disorder which would make pregnancy hazardous. Heterologous insemination is the type usually employed, because absolute sterility of the male is more common than genital malformations of either partner. For this reason, certain prerequisites to its success, as well as the technique, are herein discussed.

Moral and Legal Aspects of Heterologous Insemination: The conditions imposed upon the physician who consents to perform artificial impregnation in a potentially fertile woman, with semen from a donor other than the husband, include the proper selection of couples in which such a procedure may be risked and the careful choice of a suitable donor.

In selecting the couples, it must be ascertained that both husband and wife are equally earnest in the request that artificial impregnation be performed and that both of them fully grasp the

psychologic and emotional dangers which surround such a procedure. It is best to delay the proposed insemination for several months in order that the physician may assure himself that the husband's interest is not abnormally heightened by sheer bravado in an attempt to escape the self-accusations of inferiority. By thus familiarizing himself with the character of the husband, the physician is aided in his determination to avoid any future marital discord.

As a medicolegal safeguard, written permission for the impregnation should be obtained from both partners. The author does not deem it wise or necessary to establish all of the ceremonious legal formalities which Seymour and Koerner suggest. Several possible legal charges have been mentioned by both lay and medical writers as constituting serious obstacles, namely, a violation of the law by all concerned, the crime of adultery by the wife, and the aspersion of bastardy on the heir. There being no law, written or unwritten, concerning the legality of the act, the participation by anyone in the execution of artificial impregnation is not a statutory offence. The question of adultery is a debatable one, even though someone has said that "it is difficult to conceive of adultery being consummated in a test-tube." The common law, upon which most decisions concerning adultery would rest, considers adultery to be linked to the concept of sexual intercourse, an element lacking in artificial impregnation. However, as Beardsley points out, the Supreme Court of Ontario, in 1921, sustained a charge of adultery by stating, "The essence of the offence of adultery consists not in the moral turpitude of the act of sexual intercourse, but in the voluntary surrender to another person of the reproductive powers or faculties of the guilty person." If such a decision were generally upheld, it could be made to affect all women who submit to artificial impregnation.

The legitimacy of the child born of artificial impregnation is a delicate question. As a general rule, most statutes protect any child born in wedlock from the aspersion of bastardy. However, even though the presumption of legitimacy is one of the strongest presumptions of the law, it is not absolute under all circumstances. It is easily controverted by proof of the husband's sterility. Therefore, in order to avoid any future shadow of bastardy and to guard the property rights of the child, whose inheritance privileges may be challenged by greedy relatives, who by chance acquire knowledge of the manner of conception, it is best to establish protective measures at the time. The suggestion of Seymour and Koerner that, after pregnancy results from artificial impregnation, another physician—one ignorant of the origin of the conceptus—be engaged to complete the obstetric care does not solve the problem. The advice of the Legal Bureau of American Medical Association that

the husband institute formal adoption proceedings as soon as the child is born, while certainly a safe course, seems to be unnecessarily public. Once a man has accepted a child born to his wife as his own, the law almost guarantees the legitimacy and, therefore, the inheritance of that child. Thus, in the author's opinion, the signed, witnessed consent of both marital partners for the performance of artificial impregnation, to which the husband has appended the affirmation that the child is his legal heir; constitutes sufficient legal protection for all concerned.

The selection of a donor entails the impersonal purchase by the physician of semen from a healthy, fertile male of good character and favourable heredity—one who has no evidence, clinical and serological, of ever having had either gonorrhoea or syphilis. The donor must, moreover, be unknown to the barren couple. The request by the couple that a member of the family be employed as the donor should be categorically denied. It is obviously important for esthetic, moral, and psychologic reasons to preserve the anonymity of the donor. It is best that the donor selected be of the same racial strain as the husband and, if at all feasible, possess some of his physical characteristics.

Technique of Artificial Impregnation: The success of any insemination hinges on the potential fertility of the wife, as previously mentioned, on the excellence of the donor's semen, and on the timing of the insemination. The manner of introducing the semen into the vagina is the simplest part of the procedure. The donor is instructed to obtain the semen by manual masturbation, collecting it in sterile, dry, glass vial and keeping it at room temperature until used. The semen should be introduced into the recipient as soon as possible after its collection, certainly within an hour. The specimen should be examined microscopically, as a check, when it is received from the donor.

The wife is advised to have intercourse with her husband if he has no pyospermia, just prior to reporting for the insemination, with the hope that an imminent ovulation may be hastened and that favourable cervical secretions will be stimulated. If intercourse with her husband is not feasible, the woman is advised to take a preliminary vaginal douche with 25 per cent. solution of sodium bicarbonate. The temporary alkalinity of the vagina thus achieved may enhance the fertilising ability of the spermatozoa. With the patient in the usual lithotomy position and the table tilted to the Trendelenburg angle, the specimen of semen is then merely squirted against the external os *without exposing the cervix*. For this purpose, it is convenient to use a sterile, dry, glass syringe, and a blunt, 16-gauge needle. The patient is kept on the table in the Trendelenburg position for 30 minutes and is then permitted to follow her customary duties.

There is nothing to be gained, in the author's experience, by introducing the semen directly into the uterine cavity through a small rubber catheter or a Keyas-Ultzmann cannula. In fact, the results of the intra-uterine method may be inferior because of the expulsive contractions of the uterus evoked by stimulation of the internal os. It is imperative, when the intra-uterine technique is employed, to allow the uterine spasm caused by the passage of the catheter or cannula to subside before introducing no more than 0.5 cc. of the semen. A larger quantity of the semen tends to distend the uterine cavity and may give rise to undesirable contractions.

The timing of the artificial insemination so that it coincides with ovulation is obviously of paramount importance. When the wife is able, because of either habitual midcycle pain or cyclic expulsion of clear cervical mucus, to foretell accurately the time of ovulation, the problem is simplified. If, however, no sign suggestive of ovulation are available, as is usually the case, 2 or 3 inseminations during the mid-portion of a single cycle should be performed. When failure occurs, even after such multiple inseminations, the days of the cycle selected should be altered at the next trial. In one of the successful cases reported, for instance pregnancy did not occur after inseminations on the 11th and 14th days of the menstrual cycle but did follow subsequent inseminations on the 12th and 15th days. It is obvious that a large element of chance is involved in the meeting between a highly fertile ovum and a spermatozoon of similar quality. Seymour and Koerner recently reported that the average number of inseminations successfully employed by more than 4000 physicians was 12. This number of attempts was distributed in many ways, such as 1 insemination per month for 12 months, 2 inseminations per month for 6 months, and so forth. It is significant that 124 physicians reported successful artificial impregnation after as many as 21 inseminations. The patient, donor, and physician must be prepared, therefore, to repeat the procedure many times before meeting with success. The patient and donor will be more co-operative, if this is explained prior to the undertaking.

The recent observations of Guttmacher and Shettles on the cyclic penetrability of the cervical mucus to spermatozoa may obviate the necessity of multiple inseminations. These authors recommend the application of a micro-technique for the repeated study of the penetrability of cervical mucus and record several successful inseminations during the so-called optimal phase of maximum spermatozoal penetration. The method described appears to deserve future study and trial.

(The American Journal of the Med. Science, July, 1941.)




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SOME SUGGESTIONS ON THE RIGHT APPROACH TO FEMALE STERILITY

BY A. P. PILLAY, O. B. E., M. B. B. S.,

Whiteway Bldg. Bombay

Man is egoistic and conceited and in the realm of marital affairs he fancies he knows everything that is to know, that can never be at fault, and, if anything is wrong with him it should and must be the fault of his spouse. If his marriage turns out infertile, his wife is blamed. This is not surprising as I have seen men who are sexually weak often bringing their wives to me for examination, asserting that their condition has its origin in some disorder or disease in them. Similarly, in infertile marriages the wife is taken to gynaecologists, male or female, usually the latter, when one is available. This article is meant primarily as a criticism of gynaecologists as regards their approach to the subject of sterility.

They examine the women thoroughly, search for organic causes such as displacements and tumours of the uterus. These, when seen are corrected and if no cause can be discovered the woman is curetted. A few years ago, this operation was done as a routine measure in all classes of sterility and even now a large number sterile women are subjected to it. I cannot still understand why this operation is done or how it helps in cases of sterility, except through its psychic action if this is possible, at all. After the curetting, either the woman is assured that she would before long be a mother without any further treatment or prescribed thyroid by mouth. Others go further and prescribe progesterone injections in the second half of the menstrual cycle, and this also as a routine measure. Many of them but not all gynaecologists, enquire into the menstrual history of the patient and disorders. These are corrected by the orthodox method of injections of follicular hormone in the first half of the menstrual cycle followed by injections of luteal hormone in the second half of the cycle. Often the dosage factor is not given sufficient attention.

Our gynaecologist now feel that she has done her best for the patient. A few months later, the patient may return complaining that she is still barren. She is then probably subjected to another curetting and told that if she does not still conceive, she must consider it her *nasib*. Very few of these specialists realise that for a pregnancy to occur, the male should have healthy and active spermatozoa in his semen and that in sufficient numbers. Recently, I had a case of a medical man, married 16 years but sterile. For the last 8 years, the wife was under the treatment of a well-known gynaecologist twice curetted and given hundreds of injections of hormones. A college suggested to him that it would be wise to have his semen examined. This was done reluctantly and it was seen that his sperm count was 900,000 per c. c. and of these only 7 per cent. were motile.

This is a clear case of egoism and if it is possible in a medical man, how much more can it be possible in non-medical men? I can give

innumerable instances where the wife has been subjected to prolonged treatment, or I should say torture, for no conceivable, reason. My first suggestion, therefore, is while the wife is being subjected to examination, the husband should be asked to have his semen examined. Sterility and virility are two different conditions and though a man can have daily coitus, he may be sterile. I have discussed the question of male sterility in detail in my latest book "*Disorders of Sex and Reproduction in the Male*."

It is now recognised that though a woman may be menstruating regularly and able to enjoy sex life she may not be ovulating regularly. Pregnancy can never occur in an anovulatory cycle. Whether a woman is ovulating regularly or not therefore needs investigation. This can be done by biopsy and certain electrical methods. I have discussed a simple method for detecting ovulation, the vitamin C test, first published in the *Indian Medical Gazette* February 1940. Even a general practitioner can carry out my test easily. The treatment for an ovulation is described later.

The next fallacy is lack of appreciation of the day or days on which alone a woman can become pregnant. It was once believed that a woman can conceive only soon after the cessation of her menstrual flow. This belief is still prevalent even among a large proportion of educated persons hence they concentrate their coital activities during this period. The work of Ogino and Knaus has proved conclusively that ovulation takes place round about the mid-menstrual period. This means that woman can conceive only at this time. To be more accurate, it may be said that ovulation takes place 15 days before the beginning of the next menstrual flow. If a woman has a 28 days cycle, for example, her ovulation will be on the 14th day of her cycle, calculated from the first day of the menstrual flow. As ova can be fertilised only for 24 hours after they are liberated and the spermatozoa are believed to be active and capable of fertilising only for 48 hours after they are deposited in the genitals of the woman coitus to be fertile will have to be on the 12th to the 15th day in a 28 days cycle. The poor are notoriously prolific. One of the chief reasons for this is because they copulate daily and so the day of ovulation is not inadvertently passed over. This is why Belzac has said that the divinity that presides over maternity is chance. It is the duty of gynaecologists to give advice about these facts to their patients.

Then again, the vagina may be wide in comparison to the girth of the penis or shallow or otherwise so constituted that semen trickles out of it soon after it is deposited in it. This is immaterial if the man's sperm count is normal and spermatozoa active and healthy. If they are defective in any way, the chances of the woman's conceiving are increased by advising a posture by which the semen is retained in the vagina. These postures are the knee-elbow position

and the supine position with a cushion under the buttocks and approximating the thighs as soon as the husband withdraws his member or keeping the thighs raised by supporting the legs on a low stool. This subject I have discussed in detail in my book: *The Art of Love and Sane Sex Living*.

Even if the woman cannot do any of these things, she can be instructed to push in a piece of clean cotton or cloth into the vagina as soon as the male ejaculates. Among some communities, the wife washes the parts soon after coitus. This gives her very little chance of becoming pregnant, specially if the husband has unhealthy or defective spermatozoa. Advice as regards such matters is generally considered by gynaecologists to be beyond their sphere but this attitude is wrong.

Another minor factor, but often of importance, in sterility is the acidity of the vagina. Vagina should be alkaline at the time semen is deposited in it. I have had facilities of examining the reaction of the vaginal contents of a few women soon after coitus and found that in many cases it was acid. In cases of asthenospermia, the spermatozoa die quickly under these conditions. The woman should therefore be given pieces of blue litmus paper and asked to test the reaction of the vagina immediately after coitus. The acid reaction of the vagina after coitus is in the majority of cases due to insufficient love-play as regards time and technique. Instructions should be given as regards these. Occasionally the vagina has a normal high acidity and in these cases an alkaline wash, say half a teaspoonful of sodium bicarbonate in a tumbler of cold water, should be prescribed to be used immediately before coitus. Bad love technique means also no orgasm in the woman. Orgasm is not necessary for pregnancies to occur, but it helps.

Sterile women may be divided into two classes those with regular and normal menstrual flow and those who have irregularities in connection with this biological function. The first seldom need any active treatment, unless they have some organic defects. Their sterility is usually due to some fault in their husband or due to their anovulation. In case of anovulation, injections of follicular hormone are indicated. As the time taken by this hormone to act is about 5 days, after the injection, often one is enough, is given 4 and 5 days before the expected date of ovulation. For instance, in a woman with a 28 days cycle, ovulation takes place on the fourteenth day. The follicular hormone should, therefore, be injected on the 9th or 10th day of the cycle. I have experimented with various doses and the optimum dose found effective is 2 mg.

In women with menstrual irregularity, this should be corrected by injections of follicular hormone followed by injections of luteal hormone. Three or four injections of each, in 5 mg. doses, would be required. The dosage may be varied according to the severity of the

amenorrhœic condition. Till the menstruation is regularised, conception is difficult to occur. In obese patients, thyroid may be given empirically, though obesity is associated with hypogonadism hypopituitism and hypothyroidism.

There is another type of women, mildly masculine in appearance and also in facial appearance, with square and bony chin, slight growth of hair on the upper lip and so on. This may be hypogonadal in origin or caused by adrenal defects. They usually show some menstrual irregularity which may react to treatment with follicular hormone, but their muscular appearance and sterility remain unaffected.

These are some of the numerous minor problems that have to be understood in treating cases of sterility, as often it is the sum total of minor defects that makes a woman sterile.

(*Journal of the Obstetric & Gynaecological Society of India.*)

Extracts.

SHOULDER PAIN.

BY MUKTESH NATH BASU, L.M.S.

Calcutta.

Pain in the shoulder is sometimes seen in general practice. The causes may be either *direct* or *indirect*.

Direct causes include cases where the shoulder joint or the structures in immediate relation to it as nerves, ligaments, muscles, fasciae or bursae are involved. These include direct injury, arthritis, fibrositis, myositis, synovitis and subacromial or subdeltoid bursitis. Exposure to damp and cold can only be considered as predisposing causes. In certain occupations pain may be felt in the shoulder joint. Local paralysis of muscles may sometimes be the cause.

In the *indirect cause*, the real seat of the disease is at a distance and the pain is referred to the shoulder. In angina pectoris pain is sometimes felt in the left shoulder. Similarly, syphilitic atheroma of the aorta, aortic aneurism or aneurism of the innominate artery may produce shoulder pain. In pleurisy, intrathoracic new growth. Pneumonia or tuberculosis we sometimes though rarely get shoulder pain. In pneumothorax we often get it; this is often seen after A.P. in tuberculosis. Lesions at a distance as gastric or duodenal ulcer or cancer can produce shoulder pain though it is not common. Again, diseases of the liver or abscess, hepatitis, new growth or cholecystitis often produces pain in the shoulder, Inflammation of the brachial plexus or herpes zoster may also produce pain. Diseases of the spine as spinal caries on the cervico-dorsal region or new growth in that

region may produce referred pain. Pachymeningitis cervicalis hypertrophica may also be a rare cause.

In making a differential diagnosis, the seat of the pain must be accurately localized. There is however a general rule in making the diagnosis. Diseases inside the thorax or stomach and pancreatic colic cause pain in the left shoulder. Diseases of the liver, subphrenic abscess, hepatitis as well as perforation of the stomach duodenal ulcer and appendicitis produce pain in the right shoulder.

If the patient feels pain on pressing the joint, then the cause is either inside the joint or in the soft tissues around it. Local inflammation or wasting of muscle with impaired movement or increase of pain on movement will prove that the condition is probably only local. There is another test for determining whether the pain is local or not. Normally the scapula remains stationary if the arm is abducted until it reaches a point at right angles with the thorax; beyond this the tip of the scapula becomes rotated outwards. If the scapula rotates outwards before the arm reaches a right angle, then disease of the shoulder joint or neighbouring structures should be suspected.

For the diagnosis of subacromial bursitis, we should be able to elicit pain and the point of maximum tenderness will be just distal to the tip of the acromian process but if the arm be abducted and raised beyond a line at right angles with the thorax, the bursa slides under the acromian process and there will be no pain on pressure. In the case of subdeltoid bursa, this does not happen because it does not slide under a protecting structure.

Inflammation of a joint may be articular or periarticular.

Of the indirect causes of shoulder pain, aortic aneurism, hydatid cyst of the chest or aneurism of the innominate artery cause pain by pressing on the lower part of the brachial plexus. New growths in the spine in the cervical region or tumors of the spinal cord require the use of X-Ray for their diagnosis. Acute abdominal conditions cause shoulder pain by irritation of the diaphragm.

Both neuritis of the brachial plexus and neuritis of the circumflex nerve cause local wasting with pain which are distributed to the muscles they supply; in this the reaction of degeneration is present. In joint lesions there is also local wasting with pain but the reaction of degeneration is absent.

After hemiplegia there is often shoulder pain which is probably referred from the brain. We also find it after contractures of spastic muscles and in disuse atrophy.

(Calcutta Medical Review.)

FOOT-AND-MOUTH DISEASE IN MAN.

By HENRYK DLUGOSZ, M.D.

With each new epizootic of foot-and-mouth disease (f.a.m.d.) we must consider whether infection of man is possible, and, if so is it of practical importance? That infection may occur is instanced by the experimental infection of French scientists through drinking infected milk; by similar results among workers in the German research centre on the island of Rugen; and, finally, by positive results obtained in guinea-pig inoculation from certain cases of f.a.m.d. (aphthous fever) in man which have been described in medical journals.

Infection of man is therefore possible, and, although occurrence is rare and characterized by persistent mildness, we consider it to be of no little scientific interest. The rarity of the disease in man (we know of only ten cases prior to the last war, as opposed to many thousands of cases in animals), and its mildness, do not deprive it of interest, as the slightly affected man may start a serious outbreak among valuable live stock. As the disease causes cattle to lose weight and their milk production is lowered the condition is of paramount importance to farmers and exporters. To day especially, when the need for maximum food production is a major consideration, the early diagnosis of all cases is essential, if only from the purely economic point of view.

The author describes the clinical findings in two cases seen.

Characteristic findings are the headache and general weakness and pain in the extremities. About the third day excessive salivation and superficial ulceration of the oral mucous membrane and vesiculation of the skin around the mouth ensue. Later the vesicles appear on the palms and soles and around the nails, being preceded by cherry-coloured erythema. The vesicles contain a turbid serous fluid. All the skin and mucous membrane lesions heal without cicatrization. The temperature is high at first and falls after the appearance of the vesicles, returning to normal by the second week. In a few cases the temperature remains normal throughout. No changes are apparent in any of the internal organs, in the blood, or in the sedimentation rate (an important point in the differential diagnosis of acute leukaemia and agranulocytosis). The disease appears to run a more moderate course in man than in animals.

Differential diagnosis must include aphthous stomatitis, acute leukaemia, agranulocytosis, scurvy, and drug rashes. The distribution of the lesions, blood examination, and guinea-pig inoculation will aid diagnosis. Treatment is purely symptomatic.

(British Medical Journal.)

Medical News and Notes.

THE KISTNA DISTRICT BRANCH OF THE INDIAN MEDICAL ASSOCIATION, MASULIPATAM.

Minutes of the monthly meeting of the Kistna Medical Association, Masulipatam, held on 2-8-'43, at the Government Hospital, Masulipatam.

28 Doctors and 2 Lady Doctors attended the meeting. Tea was served, then the business meeting began with Dr. N. N. Sujeer, President, in the chair.

The President in his opening remarks introduced Dr. Venkappa, L.M.P., Provincial Secretary of the All India Medical Licentiates Association who came on a tour in connection with the recruitment of the Licentiates to Indian Army Medical Corps.

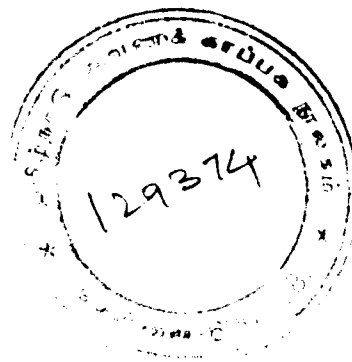
Dr. M. V. Subba Rao, Secretary, read the minutes of the last meeting held on 2-7-'43, at the Government Headquarters Hospital, Masulipatam, which was unanimously adopted.

Read letter No. C. 125 dated 30-6-'43 from the Honorary General Secretary I. M. A. Calcutta, and resolved that Dr. Jivaraj Mehata be nominated for this branch as president, and Dr. V. Ramachandra Rao, M.A., M.D., 2. Dr. Anseer of Karachi and 3. Dr. M. Seshachari as the wise Presidents.

Then the clinical meeting began with Dr. Mrs. P. Janakibai read an interesting case of operation notes of Tumour Abdomen.

Dr. Venkappa in a lengthy interesting speech appealed to the Licentiates members of the Association to join the Indian Army Medical Corps in larger numbers—Dr. P. S. Chalapatti Rao presiding.

Dr. N. N. Sujeer also spoke at very great length on the subject: Some doubts of certain members were cleared, with a vote of thanks to the President and distinguished guest of the evening the meeting closed.



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